DOMESTIC ENGINEERING

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"Nothing Doing"

By The Spectator

A peculiar situation presents itself in Chicago heating circles just now. There is an abundance of building operations; some few holding over from last year; some only recently started and many more on the boards in architects' offices, threatening to get under way at any moment. Although the year promises to outdo 1911, which was a record breaker, still from almost every quarter comes the old familiar hard luck wail "Nothing Doing." For fifteen years, more or less, The Spectator has witnessed phases of this peculiar situation annually. Within that period Chicago has grown like a weed, manufacturers have disposed of thousands of boilers and radiation running into millions of feet, yet almost invariably there is "Nothing Doing" when we discuss the dope with the heating contractor.

Twin brother to Mr. Nothing Doing is old grey-whiskered Below Cost. For fifteen years, more or less, The Spectator has been told that So-and-So, who may look to be having a little run of luck, is taking everything below cost. "So-and-So" without number have apparently dangled on the verge of bankruptcy for years, although frequently they nod gaily to The Spectator as they whisk by in their automobiles.

Is there something about the heating business that conduces to pessimism, or is it good business to create an impression of poor business, or is it just an unfortunate habit bred from the defeat incident to the gambling game of contracting? The Spectator firmly believes that it is just an unfortunate habit; that half of the "Nothing Doing," "Below Cost" and "No Profits" conversation is not backed by genuine, sincere belief, but is rather the whim of the moment on the unconscious reflection of some other person's hasty opinion. In view of the general prosperity that has prevailed for several years past, some such explanation must be fairly accurate, and if so, how exceedingly foolish is this characteristic habit of pessimism!

What's the good of success if one constantly carries with him the mental picture of failure? Is there anything more in succeeding than the consciousness of having succeeded?

Elbert Hubbard and some other people that The Spectator knows about, believe that "Prosperity breeds success." They put the loud pedal on "Prosperity" and nobody ever hears them say "Nothing Doing."

Why not form a "Prosperity Optimists' Club?"

THE SQUARE DEAL.

By A. M. Minnick, in May "Radiation."

"Business is poor"—said a steamfitter the other day. This statement was in direct contrast to one made by Morrison, a steamfitter a few blocks away. "Why, business is bully"—said Morrison. "I've got more than I can take care of. Say, do you know where I can get an experienced steamfitter? I need another good man right away."

Now, this is not a rare case by any means. You could probably find instances like this in some line of business in every town. The success of Morrison may be largely attributed to his ability in handling men. By handling men is not meant driving them ten hours a day on meagre pay—no, quite the reverse. In a word, it is the application of the "square deal." Treating your men squarely—looking after their interests as well as your own—not only pays in dollars and cents, but, what is more, gives you real satisfaction. This would be a cold, dreary world if we were all looking out for Number One, first, last and always.

Morrison had applied the "square deal" to his business. He bettered the condition of his shop. He had it well lighted and ventilated—not because of the fact that it meant dollars and cents to him, but because it also gave greater comfort to his men. Morrison bought good tools. He made this investment, not only because it meant added efficiency in

work, but also because it sweetened the temper of his employees. Nothing is so aggravating as to pick up a worthless tool and try to perform a satisfactory job.

In sending his men on a job Morrison had all the material ready for delivery before the workmen arrived. It was delivered in a systematic way. There was no loss of motion. The workmen arrived on the job in a happy frame of mind. They found everything ready—kits of tools complete—and each tool perfect. The result was efficient work. They soon learned that the boss's interest was their interest. They were conscientious in their work. They gave their employer the best they had in them.

The inevitable followed. Every job installed by Morrison gave complete satisfaction, and was installed in the minimum space of time. Morrison with the same number of employees as his competitor down the street could take care of a quarter more work.

Every employee in Morrison's shop was out rooting hard for the boss. Each employee had his little circle of friends. Many of them built homes and installed modern heating plants. This work came to Morrison.

The man who is losing money and says, "Times are hard," is the man who should apply the "square deal" to his business. Create among your men a feeling of satisfaction—get them working for your interest because of the fact that your interest is their interest, and you are on the road to business success.

Scientific Management Applied to the Heating Industry

An Up-to-Date System for the Contracting Business—How Store Should be Arranged and Method for Keeping Perpetual Record of Supplies

By Chas. S. Kellum, M. E.

(Continued)

A well-conducted contracting business should have a department devoted to the keeping of stores. The store should be so constructed that materials and tools kept therein are easily accessible when wanted. Fittings, valves and the like are best kept in small bins or on shelves. Pipe can easily be laid on racks. Fig. 1 shows a store room answering almost perfectly this description. You will also notice how well this store room is lighted.

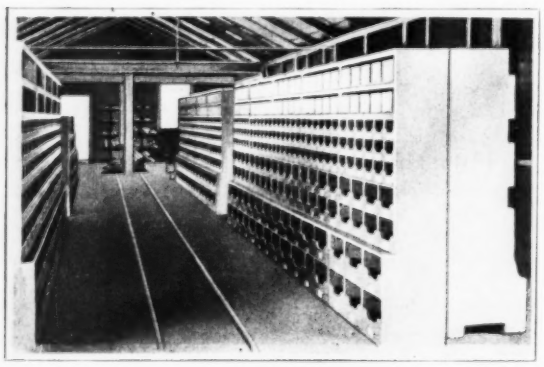

Fig. 1.—A Well-Lighted and Well-Arranged Store Room.

Probably no other department can undo a heating firm more quickly than an ill-arranged and conducted store room. Stores usually represent a heavy investment and, unless they are intelligently and efficiently handled, great loss usually results. A store room bears the same relation to the heating business that a bank bears to a community. It is a place to deposit that which has value. The bank, if properly conducted, must keep a perpetual inventory of its holdings. This is equally true of a store room in the heating business. In order to keep this perpetual inventory forms must be provided so that each transaction affecting stores is made a matter of record. In the bank money is drawn by check, while stores are drawn from stock through the medium of a "Stores Requisition." Money is entered on a deposit slip, while stores are deposited on a "Stores Credit." It is perfectly evident, therefore, that when a record is kept of the stores received and given out, both in amount and value, a perpetual inventory will result. Under this system no stores should be received in stock unless accompanied by a properly executed "Stores Credit" slip, neither should any stores be given out unless drawn through the medium of a "Stores Requisition."

In practically every business, there are three general classes of goods received in stock; namely, purchased goods, manufactured goods, and returned goods. Fig. 2 illustrates how these goods are transferred to and from

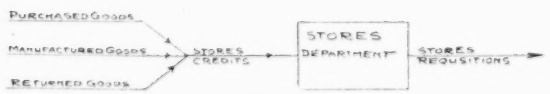

Fig. 2.

the Stores Department by the "Stores Credit" and the "Stores Requisition."

Fig. 3 shows the "Stores Credit" slip. The word "Source" refers to the source from which the goods come. This is usually signified by the purchase order number, job number or returned goods report number.

Fig. 4 shows the "Stores Requisition" blank. The job number refers to the number of the job or order for which the goods are wanted. The store keeper having

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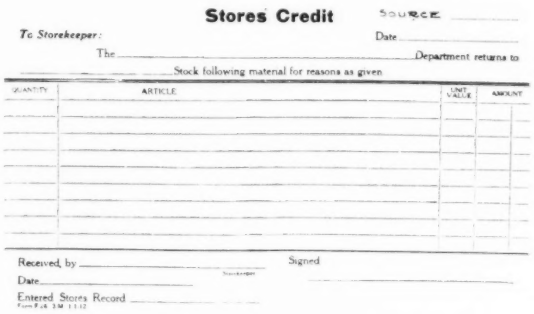
prices at hand, fills out the unit value and the amount of the goods shown on these forms.

Fig. 5 shows the stores record or the perpetual inventory card. On these cards the store keeper enters the stores credit and requisition slips under the columns marked


Stores Credit

Source

To Storekeeper: Date

The Department returns to

Stock following material for reasons as given

QUANTITY	ARTICLE	UNIT VALUE	AMOUNT

Received, by Signed

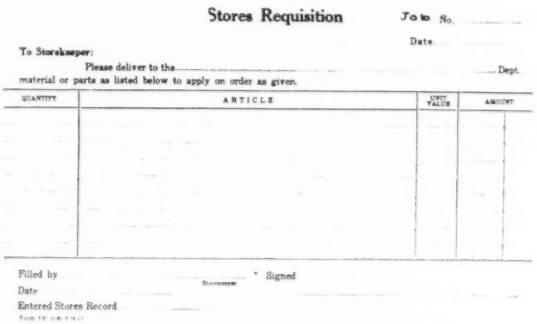
Storekeeper

Date

Entered Stores Record

Fig. 3.

"Receipts" and "Deliveries" and strikes a balance with each entry once a day. The word "unit" refers to the unit by which the part is kept, whether by pound, piece, board, feet, etcetera. After the word "maximum" should


Stores Requisition

Job No.

Date

To Storekeeper:

Please deliver to the Dept.

material or parts as listed below to apply on order as given.

QUANTITY	ARTICLE	UNIT VALUE	AMOUNT

Filled by Signed

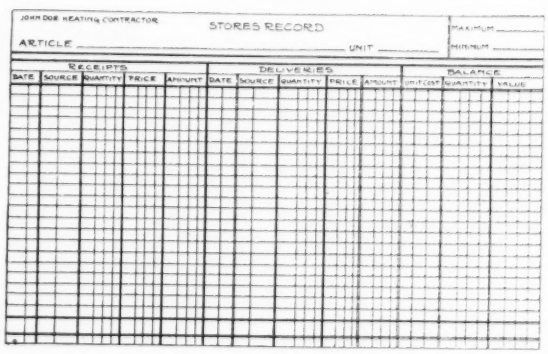
Storekeeper

Date

Entered Stores Record

Fig. 4.

be written the greatest amount of a particular part carried in stock and after the word "minimum," the least number of parts carried in stock. When the minimum or low danger mark is reached, the store keeper should


JOHN DOE HEATING CONTRACTOR

STORES RECORD

ARTICLE UNIT

MAXIMUM

MINIMUM

RECEIPTS					DELIVERIES					BALANCE		
DATE	SOURCE	QUANTITY	PRICE	AMOUNT	DATE	SOURCE	QUANTITY	PRICE	AMOUNT	UNIT COST	QUANTITY	VALUE

Fig. 5.

make an actual count of the material on hand in order to ascertain whether or not mistakes have been made. The record being correct, order is placed through the proper channel for enough of the particular material to make the maximum amount. In most store rooms a low stock report is made out by the store keeper at intervals showing parts which are below minimum amount to be carried in stock. The low stock report is delivered to the purchasing agent so that the purchase of materials for the stock room becomes almost automatic.

In determining the cost on a certain job, all store requisitions bearing the job number, together with the time cards, are collected. From these cards may be computed the actual cost of labor and material on the job. In the event that radiators, pipe or other material were purchased and sent to a job and never physically reach the stock room, stores requisition covering same should be entered with such notation to the store keeper.

With such a system of store keeping in vogue it will be readily seen that the heating contractor would have little or no difficulty in computing the cost of any job, large or small. At first blush it might appear that such a system would involve undue expense. The reverse is true, however, because, in ninety-nine cases out of one hundred, it results in a tremendous saving to the contractor. In the event that he should under-estimate the price of a certain job, he has concrete information on how and where he lost money. In other words, it enables him to profit by his mistakes.

CONVENTION DATES.

July 9 and 10, 1912.—Meetings of the Eastern and the Central Supply Associations, at Atlantic City, N. J. Headquarters at the Hotel Dennis. Frank S. Hanley, 261 Broadway, New York City, is secretary of the Eastern Supply Association, and Paul Blatchford, New City Hall Square Bldg., Chicago, is secretary of the Central Supply Association.

July 11 and 12, 1912.—The summer meeting of the American Society of Heating and Ventilating Engineers, in Detroit, Mich. The officers of the society are: President, Professor John R. Allen, Ann Arbor, Mich., vice-president, John F. Hale, Camden, N. J.; second vice-president, E. T. Capron, Chicago; treasurer, Jas. A. Donnelly, Brooklyn; secretary, W. W. Macon, 29 West 39th Street, New York City.

July 12 and 13, 1912. The Colorado Master Plumbers' Association will hold its convention in Cheyenne, Wyo. This association includes master plumbers of Colorado, New Mexico, Wyoming and Utah. The president of the association is Chris. Irving, 1525 Larimer St., Denver, Colo.

July 16, 17 and 18, 1912.—The 30th annual convention of the National Association of Master Plumbers, in Salt Lake City, Utah. The officers of the association are: President, Alfred C. Eynon, Canton, O.; vice-president, Frank J. Fee, New York City; secretary, Louis E. Deuble, 312 N. Market St., Canton, O.; treasurer, William McCoach, Philadelphia.

September 10 and 11, 1912.—The autumn meeting of the National Association of Brass Manufacturers, at Toronto, Ont., Canada. The commissioner of the association is W. M. Webster, New City Hall Square Bldg., Chicago.

A Liberal Sentence.

A West Virginia judge arraigned a shanty boater for stealing a horse, denounced him as a persistent lawbreaker and then sentenced him to ten years at hard labor in state prison.

"Have you anything to say?" he asked when he was through.

"No," said the sentenced man, "except that it strikes me that you are pretty durned liberal with other people's time."—Saturday Evening Post.

Fourth Annual Convention of the National District Heating Association

Three Days' Sessions Held at Detroit, Mich., on Tuesday, Wednesday and Thursday, June 25, 26 and 27—Seventy-four New Members Elected

The fourth annual convention of the National District Heating Association opened in first session in the convention hall of the Hotel Cadillac, at Detroit, Mich., at 10:30 o'clock Tuesday morning, June 25. There were in attendance at this opening session the largest number of delegates who have attended annual meetings of the organization. The members of this organization represent eighty central heating plants in the United States and Canada. The organization aims to better conditions in central heating and to give information regarding the business to firms which comprise its membership.

The delegates were welcomed to Detroit by Alex. Dow, vice-president and general manager of the Edison Illuminating Co., of that city. The response was made by Geo. W. Wright, of Baltimore, chairman of the organization's executive committee. Immediately following the address of Mr. Wright, the convention proceeded to routine business.

Secretary D. L. Gaskill read the minutes of the last previous meeting and these minutes were approved as read, and on vote of the delegates were entered into the records of this meeting.

Seventy-four applications for membership were presented and the name of each applicant was presented for consideration of the delegates, having been approved by the executive committee. The seventy-four applicants were then elected to membership in the organization. These applications included forty-eight active and twenty-six associate memberships.

President A. D. Spencer, of the association, then read his annual report. This report set forth all of the past activities of the organization and welcomed suggestions for its future growth.

Report of the executive committee was read; after which Secretary-Treasurer D. L. Gaskill read his annual report. These reports were referred to the resolutions committee and the auditing committee for further consideration.

Following the announcements of the entertainment plans of the convention, the first session was adjourned.

Second Session.

The second session of the convention was called to order promptly at 2:30 o'clock and the report of the Meter Committee was presented to the organization by A. P. Briggs, chairman, representing the Edison Illuminating Co., of Detroit. The reading of this paper brought forth a discussion which was both interesting and instructive.

One of the most interesting features of this session of the convention was the following paper: "Common Sources of Trouble in Customers' Installations," read by Wm. E. Darrow, representing the Merchants Light & Heat Co., of Indianapolis.

"In ten years the Merchants' Heat & Light Company of Indianapolis has developed the largest system of exhaust steam heating in the United States. At the present time more than twelve miles of steam mains and tunnels have been constructed, and more than a million feet of radiation is connected to the system.

The company operates two plants, electric lighting plants, connected by 30 in. and a 20 in. steam main. The larger plant has 10,000 boiler horsepower and the smaller one 2,000 boiler horsepower.

The equipments of the power plants of the Merchants' Heat & Light Company are suitable for heating. We have a 8,000 H. P. Corliss engine set, which operates eight months on heating mains and the remaining four months on a jet condenser and two turbines of the condensing type, and two that are non-condensing, the latter operate through the heating season and are held for reserve during the summer months. We have recently placed our order for a 10,000 H. P. turbine of the bleeder type, which will operate during the winter on heating and in summer on a jet condenser.

From above description you will see we have what might be termed a flexible power plant; that is, we can operate condensing or non-condensing with utmost efficiency. Experiment and experience have taught us that in purchasing apparatus for a plant of the heating type, always to purchase apparatus which will serve the year through and which will not necessitate carrying the investment cost through the respective idle seasons.

An area of about four square miles is served from our system, the most remote service being about two miles from the boiler plant. This service is supplied to department stores, public buildings, theaters, hotels, apartments, private houses, and in fact to all class of service.

The service includes steam for heating and cooking and for producing hot water. The rapid growth of this system has done much for a cleaner and brighter Indianapolis, and with the present trend and demand, there will not be a single private boiler plant in the business district at the expiraton of another five year period.

A heating system primarily includes three principal divisions. 1st, a fuel burning plant; 2nd, a transmission system and 3rd, a diffusion system. It is with the 2nd and 3rd divisions that we are particularly concerned today.

An exhaust system of steam heating is necessarily a low pressure system, and it is used only for the purpose of conserving and selling the heat in exhaust steam that would, unless the power plant is fitted for condensing, go to waste. Even then we are prone to forget the continual cost of condensing the steam in order to gain a few per cent more efficiency at a sacrifice of maintenance on condenser and water cost.

The specifications and requirements of our company include the designing of the customer's installation in such manner that with one pound pressure at service valve, a temperature of 70 degrees can be maintained, when the outside temperature is 10 degrees below zero.

This requirement brings us to one of the first difficulties with customer's installation—lack of radiation and insufficient pipe capacity for zero weather conditions. The company has for years conducted a campaign of education for architects and piping contractors along these lines, and to this end has insisted that plans be submitted to the company's engineering department to be checked up, before a contract for heating would be ac-

cepted. To-day we find architects and contractors more than willing to shift this burden to the company, and in no case during the past ten years, where the Company's requirements have been met, has there been any complaint of service. The doctrine of ample mains and risers and sufficient radiation is a guaranty of a satisfied customer.

Again too little attention is paid to the air valves on radiators. In order that radiators may be active, the air valves must be sensitive so that they will respond quickly to the cooling that takes place with an air accumulation.

We also require every customer's installation to be equipped with at least one thermo-control valve. The valve is usually placed near the point of energy of the service to the building and is controlled by a thermostat at the most suitable location. Unless otherwise ordered, it is set for 70 degrees. On streets where we have air pressure lines, we use the Powers Regulating valve, in districts where we have no air, the Sylphon Regitherm control, which is entirely mechanical and self-contained.

On account of the initial cost many try to evade the installation of these control valves, but we believe that success and economy of central station heating are largely dependent upon such factors. (15% to 30% saving.)

The most satisfactory item in steam heating from the consumer's point of view is a constant temperature and also it is the most economical method for the company. This result is only attained through the medium of a master regulating valve, which is automatic.

Another factor is the cooling or economizing coil. This again is a requirement that has to be insisted upon in many cases. 15% to 20% of the total radiation must be in the form of cooling coils. This is partly due to the company's desire to utilize all the heat possible in the steam supplied and partly because the city's ordinances require that the trap discharges shall not exceed 125 degrees F., the company's aim is always to get the last heat unit from the steam.

In the above I have attempted to point out briefly some of the things which require care in the customer's installations. Leaving the customer's installation and passing to the street, we find three important requisites for construction of pipe lines.

1st. Drainage or removal of all water accumulations from possible contact with the steam lines.

2nd. Provision for expansion, and

3rd. Insulation.

I think within the past ten years we have tried all kinds of construction generally known and used, and from the experience, we have developed a construction of our own which has both a minimum first cost and a degree of permanence only exceeded by the most expensive tunnel construction.

Our 30 in. lines are all in tunnels, but for the sizes 20 in. and down, we have adopted for the outer wall ordinary sewer tile, split longitudinally in half. For example, on a 20 in. line, we use a 27 in. sewer tile. The lower half of this tile is laid to grade and the half joints at bell are cemented. On the bottom of tile are laid the cast iron expansion rollers and plates, then the pipe is put in place and insulated with 1½ in. covering. Then the top of the sewer tile is placed in position and cemented. This form of construction while not what we usually call tunnel construction, is to all purposes the same, covering all the points.

Expansion joints and traps are placed in man holes approximately 200 feet apart. Considerable care and inspection are required to keep expansion joints and traps in perfect condition. We find these items, however, of vital importance to good service and economical operation.

For covering of street mains, the insulation must be fireproof, water proof and flexible to a slight degree. We have lately adopted a mineral covering for our pipes which we think more nearly approaches the ideal covering than any heretofore offered. It is a sectional moulded covering, has an insulating quality as good as 85 per cent magnesia, is apparently not mechanically injured by repeated wettings and dryings, and has high heat resisting qualities.

We have had the usual experience with wood shavings, mineral wool, pumplog, wood boxes, felt, asbestos and tar paper, etc., etc. The life has gone out of all of these in a short space of time. We find any insulation which is not strictly mineral has great deterioration, due to gases, escaping gases, ordinary decay and electrolytic action.

You will readily understand that heat loss in underground mains is very nearly a constant amount and cannot be expressed as a fixed percentage of total steam generated for the reason that, when the consumption is large, the loss percentage is small and vice versa. Experiments and calculations made by the writer indicate our line condensation loses at 10 per cent of amount delivered to heating main.

In conclusion it is hardly necessary to say that we have passed through years of pessimism as to the feasibility and financial success of central station heating. The necessity for central station heat is becoming more and more apparent. The amount of heat and the length of the heating season are factors depending on the climate and custom. On the continent of Europe 60 degrees is considered comfortable, while here in America, we say 70 degrees.

We have just passed through the most severe winter known since central station heating has been in vogue. The customers have had praise for the heat the whole season through, and the only severe "kick" received was investigated and found to be caused by improper piping, at the radiators; this being eliminated, the customer system was again normal and gave excellent service.

As a last word we would say, inspect your customer's plumbing, require good regulators, cooling coils, traps and 1 pound of steam at service valve to secure circulation, and your customer will be pleased, and will become a "booster" for the central station plant."

A lengthy discussion of this paper was indulged in by several delegates.

A. C. Shepherd, of the Cleveland Electric Illuminating Co., Cleveland, read a paper entitled "Quality of Steam as Served by Central Stations to its Customers." After a brief discussion of this paper the convention adjourned until 9 a. m. Wednesday.

Third Session, Wednesday, June 26.

Wednesday's sessions of the convention were held on board the steamer, "Pleasure" which was chartered by the entertainment committee for the exclusive use of the association. The steamer left the dock between Bates Street and Woodward Avenue at 9:30 o'clock a. m. The trip afforded the delegates an opportunity for viewing the Detroit River, Belle Isle, the Government Ship Canal and the St. Clair Flats—called the Venice of America. A buffet luncheon was served on board the boat and excel-

lent orchestra music was furnished during the entire trip. The day's sessions of the convention did not interfere with the enjoyment of this river and lake excursion. On the return trip the steamer stopped at Insel Ruhe dock, Belle Isle, and the delegates enjoyed an hour on Detroit's famous island park. After inspecting the aquarium and other interesting places on the island, the delegates gathered at the island Casino for dinner, returning to the city at 8 p. m. by motor bus.

At the first business session of the convention on board the steamer occurred the election of officers. The officers elected for the ensuing year were as follows:

President, R. D. DeWolf, Rochester, N. Y.

First vice-president, J. F. Lewis, Detroit.

Second vice-president, J. L. Hecht, Chicago.

Third vice-president, E. Darrow, Indianapolis.

Secretary, treasurer, D. L. Gaskill, Greenville, O.

Executive committee—

H. R. Wetherell, Peoria, Ill.; W. A. Wolls, Columbus, O.; A. D. Spencer, Detroit, ex officio.

Following the election of the foregoing officers, the city of Indianapolis was selected for the next meeting place of the association.

Other features of the first business session on board the steamer were the reading of the report of the committee on rates, by R. D. DeWolf, chairman, and a paper entitled, "An Analysis of Heating Rates" by A. E. Duram, of Chicago, and the reading of the report of committee on central station records by Chairman H. R. Wetherell, of Peoria, Ill.

At the second session of the convention on board the steamer "Pleasure" A. H. Kruesi, of Schenectady, N. Y., read a paper entitled, "Heating in Connection with Steam Turbines." This paper was followed by an interesting discussion.

J. F. Lewis read a paper entitled, "Description of a Combined Steam Heating, Ice and Electric Power Plant." Discussion on this paper was deferred until the Thursday morning's session of the convention which was to reconvene in the convention room of the Hotel Cadillac.

Fifth Session, Thursday, June 27.

At the opening of the fifth session of the convention considerable business deferred from previous session was disposed of.

G. E. Chapman, of Chicago, read to the delegate a paper which was a description of a large hot water heating system. This paper was illustrated with charts and was one of the most interesting feature of the convention. S. M. Bushnell, of Chicago, then read a paper entitled, "Sectional Steam Heating in Chicago." Mr. Bushnell represents the Illinois Maintenance Co., of Chicago, and his paper presented to the delegates many interesting features in connection with the subject. The paper was followed by a brief discussion after which the morning session of the convention adjourned.

Sixth Session.

The afternoon session opened at 2:30 o'clock and was called to order by President-elect R. D. DeWolf, of Rochester. Mr. DeWolf introduced to the delegates Mr. W. Jennings, of Harrisburg Steam, Heat & Power Co. Mr. Jennings then read a paper entitled, "Depreciation in Underground Distribution Systems." This paper was followed by a brief discussion. E. D. Dreyfus, representing the West Pennsylvania Traction and Water Power Co., of Pittsburgh, then read a paper entitled, "Economic Survey of Combined Power and Heating Plants."

A symposium was then presented for the consideration of the delegates, descriptive of underground insulation, set forth by the H. W. Johns-Manville Co., Michigan Pipe Co., American District Heating Co., and Central Station Engineering Co. After a brief discussion the convention adjourned sine die.

List of Names of Delegates, Guests, Manufacturers' and Trade Press Representatives Who Were in Attendance.

Allen, Horace E., Toledo Rys. & Lt. Co., Toledo, O.
Austin, H. A., Amer. Dist. Steam Co., Lockport, N. Y.
Arens, A. T., Jenkins Bros., So. Bend, Ind.
Armagnac, A. S., "Heating & Ventilating Magazine," New York.
Bryant, W. G., and wife, Cent. Station Steam Co., Detroit.
Bushnell, S. M., Ill. Maintenance Co., Chicago, Ill.
Bly, G. D., and wife and daughter, Monarch Supply Co., Toronto, Can.
Bishop, C. R., American Steam Co., Buffalo, N. Y.
Bettes, A. E. and wife, Kansas City Heating Co., Kansas City, Mo.
Bettes, Mrs. A. E., Kansas City, Mo.
Biggs, A. P. and wife, Central Heating Co., Detroit, Mich.
Cadwell, O. H., "Electrical World," Chicago, Ill.
Cone, J. A., W. Johns-Mansville Co., Detroit, Mich.
Cotter, E. J., Crane Co., Detroit, Mich.
Chapman, G. E., Public Service Co. of Northern Illinois, Oak Park, Ill.
Cramer, L. A., Harrisburg Steam Heat and Power Co., Harrisburg, Pa.
Dow, Alex. and wife, The Edison Ill'g. Co., Detroit, Mich.
Dreyfus, Edwin, Pittsburg, Pa.
Duncan, R. T., Central Heating Co., Detroit, Mich.
Darrow, E., Merchants Ht. & Lt. Co., Indianapolis, Ind.
Donohue, D. T., Merchants Elec. Lt. Ass'n., Lafayette, Ind.
Degan, J. E., American Radiator Co., Detroit, Mich.
Devine, Jno., Miama University, Oxford, Ohio.
Englist, Thos. J., Muncie Elec. Light Co., Muncie, Ind.
Flynn, O. M., Anchor Packing Co., Detroit, Mich.
Francois, Miss, Murphy Co., Detroit, Mich.
Glaser, J. P., Chamberlain Metal Weather Strip Co., Detroit, Mich.
Garner, S. C., Hazelton Steam & Htg. Co., Hazelton, Pa.
Gail, C. W., Jones & Laughlin, Detroit.
Getchell, Fuller J., The Edison Ill'g. Co., Boston, Mass.
Gillhams, C. A., Cent. Station Eng. Co., Chicago, Ill.
Gaskill, D. L., Greenville Elec. L. & P. Co., Greenville, Ohio.
Gaskill, D. A., Greenville Elec. L. & P. Co., Greenville, Ohio.
Gifford, B. T., American Dist. Steam Co., Chicago, Ill.
Hess, W. D., Builders Iron Fdry., Providence, R. I.
Horning, J. C., W. H. Scott Co., Chicago, Ill.
Hansen, Andrew.
Horning, F. H. & wife, A. Wykoff & Bon. Co., Elmira, N. Y.
Hooks, C. D., Cent. Station Steam Co., Detroit.
Herrick, H. V., and wife, H. W. Johns-Manville Co., Detroit.
Hiles, J. D. and wife, Amer. Fdry. & Cons. Co., Pittsburg, Pa.
Hurley, John T., Chamberlain M. Strip Co., Detroit, Mich.
Higgins, G. D. and wife, Murphy Co., Detroit, Mich.
Hobbs, J. C., Allegheny Co. Lt. Co., Pittsburg, Pa.
Ingersoll, A. E. and wife, General Elec. Co., Detroit.
Ivers, J. G. and wife, Central Heating Co., Detroit.
Irwing, O. C., Berlin Public Service Co., Berlin, Wis.
Jacques, E. G. and wife, Buckeye Chem. Co., Detroit.
Johnson, F. L., Col. Ry. & Lt. Co., Columbus, O.
Keep, W. J., Michigan Stove Co., Detroit.
Kellogg, F. F., Allegheny Co. Light Co., Pittsburg, Pa.
Krussi, A. H., General Electric Co., Schenectady, N. Y.
Keplinger, Chas. and wife, Standard Mfg. Co., Toledo, O.
Kellogg, H. B. and wife, Central Heating Co., Detroit.
Klingelhofer, W., and wife, Amer. Fdry. & Cons. Co., Pittsburg, Pa.
Kline, Walter J., Amer. Dist. Steam Co., Lockport, N. Y.
Kirchner, H. C., Amer. Dist. Steam Co., Detroit.
Kellogg, F. F., Allegheny Co. Light Co., Pittsburg, Pa.
Lewis, L. H., Chamber of Commerce, Indianapolis, Ind.
Lothrop, G. V. N., Central Heating Co., Detroit.
Lau, H. B., Harrisburg Ht. & P. Co., Harrisburg, Pa.
Lewis, J. F., and wife, Murphy Power Co., Detroit, Mich.
Lincoln, A. B., Houston Coal Co., Detroit.
Lamaid, A. H., Michigan Power Co., Lansing, Mich.
McSorley, C. M., American Radiator Co., Detroit.
McDonald, William F., Detroit.
McNamara, J. W., and wife, Central Heating Co., Detroit.
McGeorge, Harold, Chamberlain Metal Weather Strip Co., Cleveland, O.
Mason, Mr., Harrison Sfty. Boiler Wks., Detroit.
Meyer, J. H., and wife, V. D. Anderson Co., Detroit.
Meyer, Miss Jennette, V. D. Anderson Co., Detroit.
Moulton, W. W., "Engineering Review," New York.
Martin, M. L., and wife, The Detroit Edison Co., Detroit.
Martin, W. K., and wife, Crawfordsville Htg. Co., Crawfordsville, Ind.
Moore, W. M., and wife, Buckeye Chemical Co.
March, R. C., Public Service Co., Northern Illinois, Evanston, Ill.
Murphy, L. H., Central Heating Co., Detroit.
Newman, Wm. A., Central Heating Co., Detroit.
Negley, E. H., and wife, Canton Gas & Elec. Co., Canton, Ill.
Oehlmann, C. F., Denver Gas & Elec. Co., Denver, Col.
O'Mara, Miss, Murphy Co., Detroit.
Owen, W. R., Cent. Station Steam Co., Detroit.
Parsons, W., Springfield Lt. & Pr. Co., Sringfield, Ohio.
Pond, H. O., Westinghouse, Church, Kerr Co., New York.
Poe, C. A., and wife, Wright Mfg. Co., Detroit.

Patrick, J. L., Armstrong Cork Co., Indianapolis.
Peck, Chas. J., Crane Co., Detroit.
Payne, M. V., W. H. Shott Co., Chicago, Ill.
Rogers, S. C., Toledo Ry. & Lt. Co., Toledo, O.
Rogers, A. C., and wife, Toledo Ry. & Lt. Co., Toledo, O.
Rabbe, Oscar F., Toledo Ry. & Lt. Co., Toledo, O.
Richardson, A. N., Kansas City Heating Co., Kansas City, Mo.
Redfield, J. V., Cent. Station Steam Co., Detroit.
Ross, O. H., U. S. Radiator Co., Detroit.
Ruth, H. A., Helena Costume Co., London, Can.
Seeger, A. M., Toledo Ry. & Lt. Co., Toledo, O.
Slovell, A. L., American Radiator Co., Cleveland, O.
Smith, H. B., Jr., Michigan Pipe Co., Bay City, Mich.
Shepherd, A. C., Cleveland Elec. Ill. Co., Cleveland, O.
Seekell, C. A., and wife, Central Heating Co., Detroit.
Spietler, C. H., Dayton Tr. & Lt. Co., Dayton, O.
Staten, C. M., H. W. Johns-Manville Co., New York City.
Spencer, A. D., and wife, Central Heating Co., Detroit.
Scheffler, F. A., Central Heating Co., Detroit.
Symes, R. W., and wife, Central Heating Co., Detroit.
Stokes, C. M., and wife, Richards-Wilson Htg. Co., Norristown, Pa.
Shaw, L. S., Indianapolis.
Stolt, James E., Hamilton & Sholt, St. Thomas, Ont.
Screnson, H. P., "Domestic Engineering," Chicago.
Trombley, J., and wife, Buckeye Chemical Co., Detroit.
Tuke, H. A., Murphy Heating Co., Detroit.
Tyler, E. B., Tyler Underground Ht. System, Pittsburg, Pa.
Van Valkenburg, H. S., American Radiator Co., Detroit.
Vinners, Chas. T., Chamberlain Metal Weather Strip Co., Detroit.
Wilson, T., "Power," New York City.
Wilson, J. H., Richards-Wilson Co., Grand Rapids.
Wilder, E. L., Rochester Lt. & Pr. Co., Rochester, N. Y.
Wetherell, H. R., and wife, Peoria Gas & Elec. Co., Peoria, Ill.
Walls, W. S., Col. Ry. & Lt. Co., Columbus, O.
Whitter, H. M., Chamberlain Metal Weather Strip Co., Boston, Mass.
Wright, G. W., Terminal-Frezeng Htg. Co., Baltimore, Md.
West, L. D., Cleveland Elec. Ill. Co., Cleveland, O.
Wallace, D. T., The W. H. Shott Co., Chicago, Ill.
Wurster, John C., C. R. & T. C. Ry. & Lt. Co., Cedar Rapids, Ia.
Wells, W. H., American Dist. Steam Co.
Wright, C. E., The Metal Worker., Chicago, Ill.
Westover, H. J., American Gas & Elec. Co., New York.
Wilkinson, Mrs., Elmira, N. Y.
Woodworth, H. A., Public Service Co., Evansville, Ind.
Walsh, J. D., American Dist. Steam Co., Lockport, N. Y.
Walker, J. H., The Edison Illuminating Co., Detroit.
York, B. S., and wife, Westinghouse, Detroit.

THE HEATING MAIN.—VII.

Jack was a mighty good steam fitter. He did not average a dozen leaks per year on his jobs of steam work and was, consequently, proud of the fact. Yet, whenever they chanced to put him on a hot water job, it was better than a day's work to caulk up the leaks after him. He fell down on that line of work time after time and never could seem to understand just why it happened until one day a boss told him (after observing his mode of work for a while) that he had more pressure to contend with on the water jobs and that he required better joints, a snugger fit between the threads on the pipe and the threads in the fittings. Jack had been cutting long threads and making up the fittings six or seven threads and sometimes more. The boss told him to shorten up the threads, not cut them so deep and from that time on Jack did not have any more leaks accordingly than anybody else.

Right here somebody remarks, "why, then, you could not put on a fitting more than two or three turns." Sure. How many old jobs have you ever pulled apart where some of the fittings had been only one turn on and had held tight for twenty years or more? I do not say that one thread is sufficient, as a general average, but I do say that it depends upon the way the iron meets iron as whether or not you have leaks, regardless of the number of threads the fitting may be made up.

So it takes a safer and surer man to do the more particular work of hot water heating, than it does to do the ordinary run of steam fitting. I make no mention at this point of the vacuum work. Many fitters have put in job after job of both steam and hot water and have never stopped to think why it was that they had so many more leaks on the hot water work.

I well remember one boss fitter telling me that it was all "bunk," this story about the hot water fitting being so much more particular. "Why, there's nothing to it; any one can put in those pipes" he said to me when I called his attention to the slack manner in which he permitted some of the work to be thrown in. Now it happened that this job was a big one requiring several fitters some weeks to complete. There was also a paid inspector who had to pass the work. When they came to fill the system and make a test, the water fairly rained through the floors from the many leaks all over the building. It took two fitters some three weeks to caulk up the job so that it would pass the test. With the best of care, on an installation of that size there would most probably have been a few leaks from split fittings, bum threads and cracked fittings, but nothing but what one or two men could easily repair in a couple of days at the most.

I don't go much on dope as applied to leaks. The fitter who depends on any kind of dope to make his work hold up has something yet to learn in the business. To be sure there are several excellent cements on the market, which, in an emergency can sometimes be used to advantage; but on a general proposition it is far better and safer and much more satisfactory to rely on good dies, good pipe and fittings and the knowledge that you know how to put the work together so that it will not, in all probability, leak.

The pipe work has, in the past five or six years, been greatly changed in many places by the introduction of different systems of hot water and vacuum heat requiring (or permitting) the use of much smaller pipes. In some places I have observed radiators piped with pipes one-half the size that it was thought necessary to use a few years ago, and I must confess that many of these jobs were "eye openers." It's all right (maybe) to say, "oh, give me the open tank or the simple gravity systems," they are reliable; but when one can set some of this small pipe work as installed by a competent man who knows just how it should go, and can see the job actually delivering the goods, what's left to say or to raise a kick about? As well expect us to go back to the old-fashioned street car drawn by a sad and weary team of horses, abandoning the modern time-saving trolley car. This is an age of progress and the heating and plumbing trade is showing its effects as well as could be expected from a class of men who have, in the past, been prone to seize many things that were to their own advantage, to put it in the mildest form possible.

One of the greatest bars to first class work in any place is the lack of application and good "horse sense" upon the part of the man actually doing the work. He may have the best of tools, reliable material and an ample set of plans for a guide. The boss may have figured to have a good job and allowed enough time for a mechanic to do the work, and yet on top of all that, the job may be a complete failure for the want of the proper observance of some of the small points that I have stated in this and foregoing articles.

Phoenix.

OBITUARY.

Herbert R. Fittz.

Herbert R. Fittz, a member of the plumbing firm of Fittz & Barker, of Natick, Mass., died suddenly at Lake Cochituate a few days ago. Mr. Fittz was a native of Middleboro, Mass., and was 62 years of age. Besides being a prominent business man of Natick he was a deacon of the Baptist church. A widow and several children survive.

"Domestic Engineering" Cartoon on "The Evils of Sub-Contracting".—LXV.

"It's Big Game, Boys!"

If you want to possess a special proof of this or any other of our cartoons, let us have your request at once. We have many applications for our cartoons for framing and want to take good care of all demands made.

A Sewage Disposal System for a Country House

Comprehensive Plans and Explanation of a System and Necessary Plumbing Equipment Which are of Pertinent Interest for the Advancement of the Plumbing Industry

By Cecil F. Herrington

At the present time the people living in the country are being awakened to the fact that it is possible for them to have all the modern conveniences, such as steam heat, electric light, pure water and bathrooms that city residents have, and why should they not? Because one lives in the country is no reason why one should use wood stoves or open fireplaces, candles or kerosene lamps, or that one should drink well water supplied through the old wooden bucket. And fully as important as these, from a standpoint of health, is the fact that it is entirely unnecessary that one should have a disfiguring and suggestive outhouse located in the yard when a bathroom with all the modern fixtures installed is an entirely feasible idea. So many people believe that without a public sewer running in the street they are unable to enjoy the comfort and benefits derived by having plumbing fixtures in the house. Of course, they know it is possible to have a cesspool, but this thought fills them with horror and

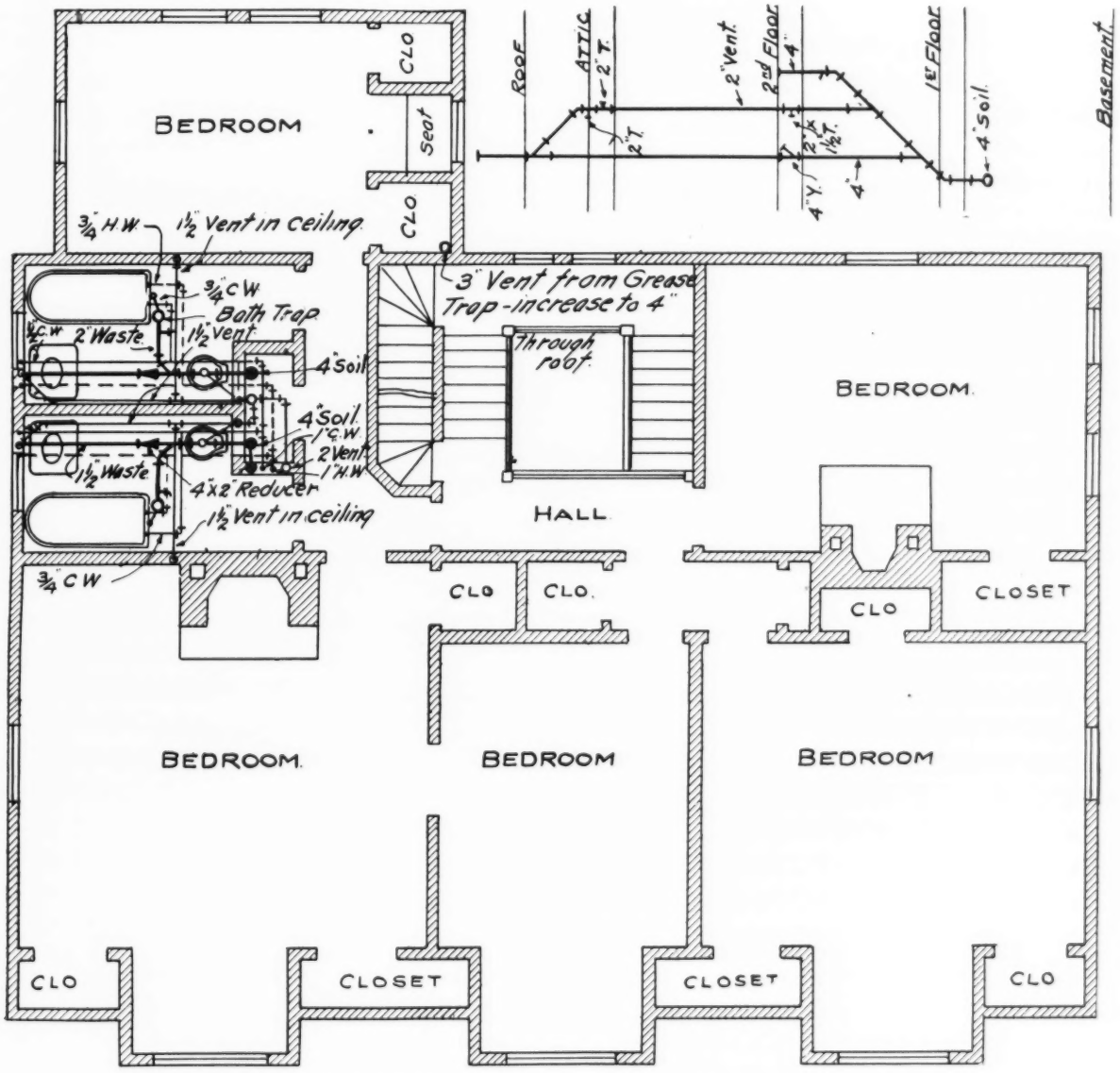


Fig. 1.—Plan for Second Story of a Modern Country Home Showing Piping Requirements.

rightly so, for cesspools are detrimental to their own as well as their neighbors' health.

And there are many people living in the country today, who are using a back yard outhouse or a kitchen pump and a pail of water for washing purposes, because they do not believe they could have such sanitary conveniences without going to a great expense. This is a mistake for the cost would not amount to much, in consideration of the advantages gained, and no more in proportion than what the city resident pays for the same conveniences in the same size of house, and how and for what this may be done is the object of this and succeeding articles on this subject. The following figures show the plumbing plans of a small house, say for a family of about six people.

Fig. 1 shows a plan of the second story of this house, having two bathrooms; one of these can be used by the family and the rear one by the "maid" who has the rear bedroom.

How the bathroom fixtures are to be piped up is clearly shown on the plan, the elevation of the two 4-inch soil stacks being shown in the upper right hand corner. The

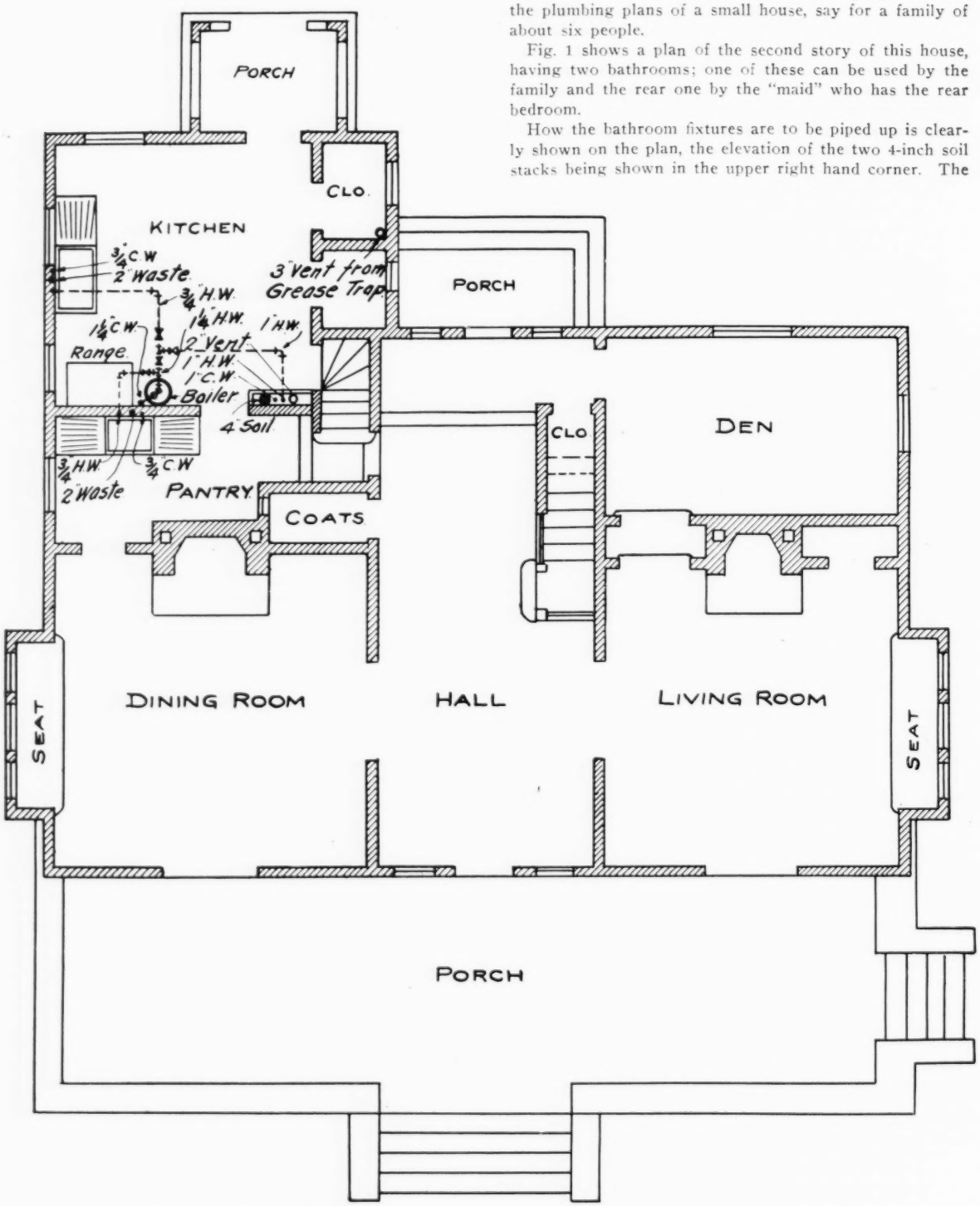


Fig. 2.—First Floor Plan of Same House Showing Complete Plumbing Requirements.

piping is shown running in the direction of the floor beams so that needless cutting of beams is done away with. The vent pipes are carried across the room in the ceiling or can be carried in the attic floor, if necessary. These two bathrooms are shown with all the necessary pipes and fittings, traps and back venting that would be required by the best city house piped under the rules and regulations of a first-class plumbing code. To distinguish it from the cold water supply the hot water line is shown by dotted lines, but it runs in the floor just the same as the cold water and other pipes.

Fig. 2 shows the first floor plan of the same house; the kitchen has a sink with a drain board and the reader will also note there is a pantry sink in the pantry.

The boiler is shown directly connected to the cold water supply from the cellar, while the hot water lines are distributed exposed on the kitchen ceiling, with branches of the sizes shown on the plans running to each sink, and a line to the shaft where it goes up to the bathrooms, supplying the fixtures there with hot water.

Fig. 3 shows the cellar or basement plan of the house in which the laundry tubs are placed instead of in the kitchen. By doing this you lessen the disagreeableness of wash days so that the odors of washing do not mix with the food being prepared as they would if the laundry tubs were placed in the kitchen.

For the laundry tubs there is shown a small boiler and laundry stove; this is done because the tubs are placed too far away from the boiler in the kitchen and also it is always best to keep the hot water supply to the laundry separate from the rest of the house, for otherwise you would not be able to have hot water at all times for the sinks and bathrooms, if the laundry tubs were being used.

The reader will also observe that there is shown a grease trap which will be buried in the ground under the

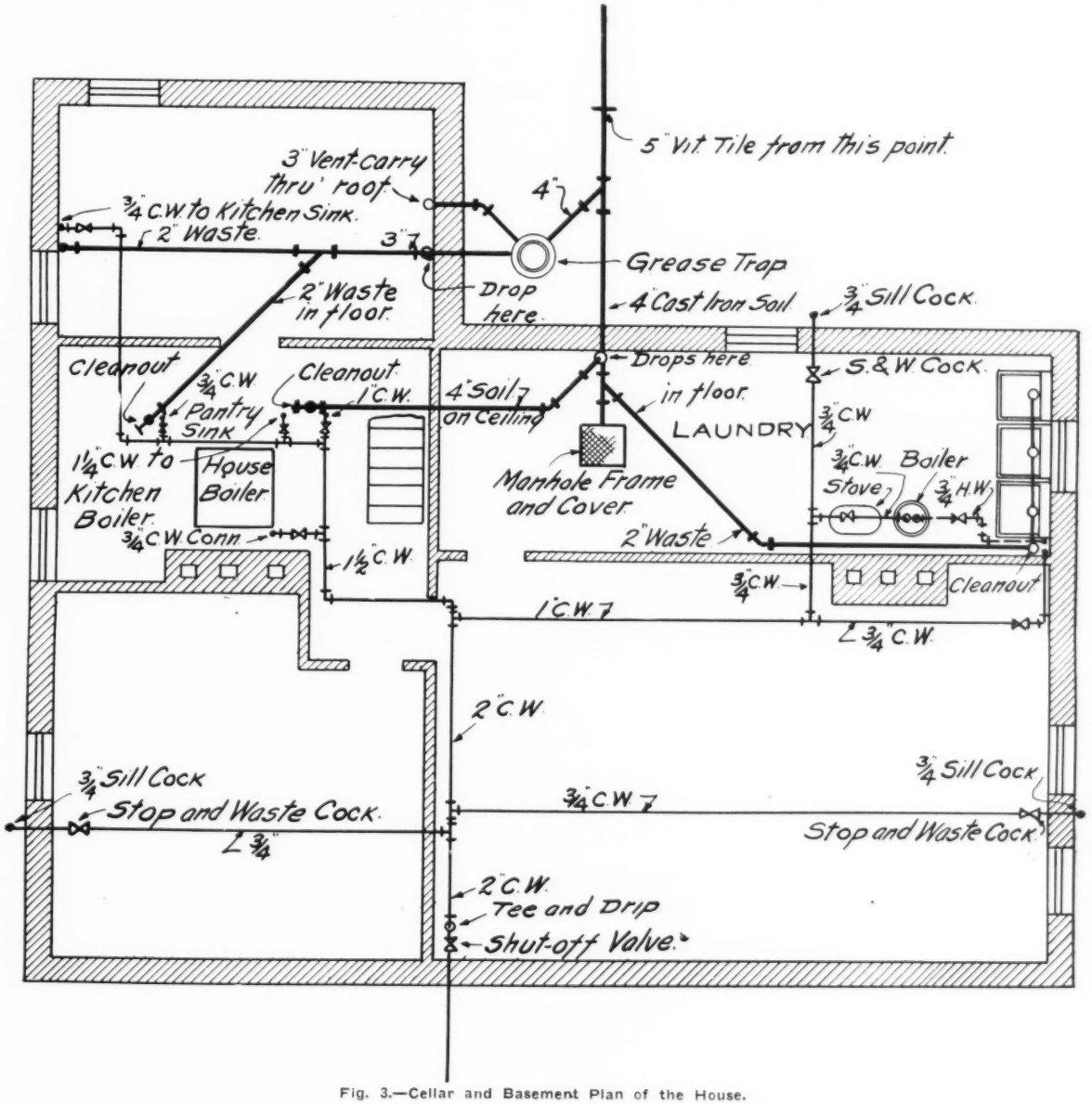


Fig. 3.—Cellar and Basement Plan of the House.

back porch, but it must be readily accessible for cleaning, as it has to be cleaned regularly, and often, and by running a vent back into the house and up through the roof (which acts like a chimney flue), there will then be no odor arising from the trap, except when cleaning it, for the odor will be carried up to and out at the roof.

On all sewage disposal systems a grease trap should be placed to take care of the kitchen wastes, otherwise the grease will congeal in the pipes before reaching the septic tank, which would reduce the area of the pipes and would be exceedingly hard to clean out.

The waste pipes from the sinks are carried along the ceiling to the wall where they drop and run out under ground, to the grease trap.

shown, the first called an intercepting or settling chamber, the second a septic chamber and the third a syphon chamber having a 5-in. sewage syphon which automatically discharges the contents of the chamber when reaching the water line as marked.

As shown the tank is built of concrete with steel rods and is built rectangular, but each chamber can be built of brick with domed openings if desired, it being a matter of taste and local conditions; either will work effectively.

The drain from the house which, of course, must enter above the water line, discharges the sewage into the first chamber; leaving the solid sewage on the bottom, the water will gradually rise and overflow into the sec-

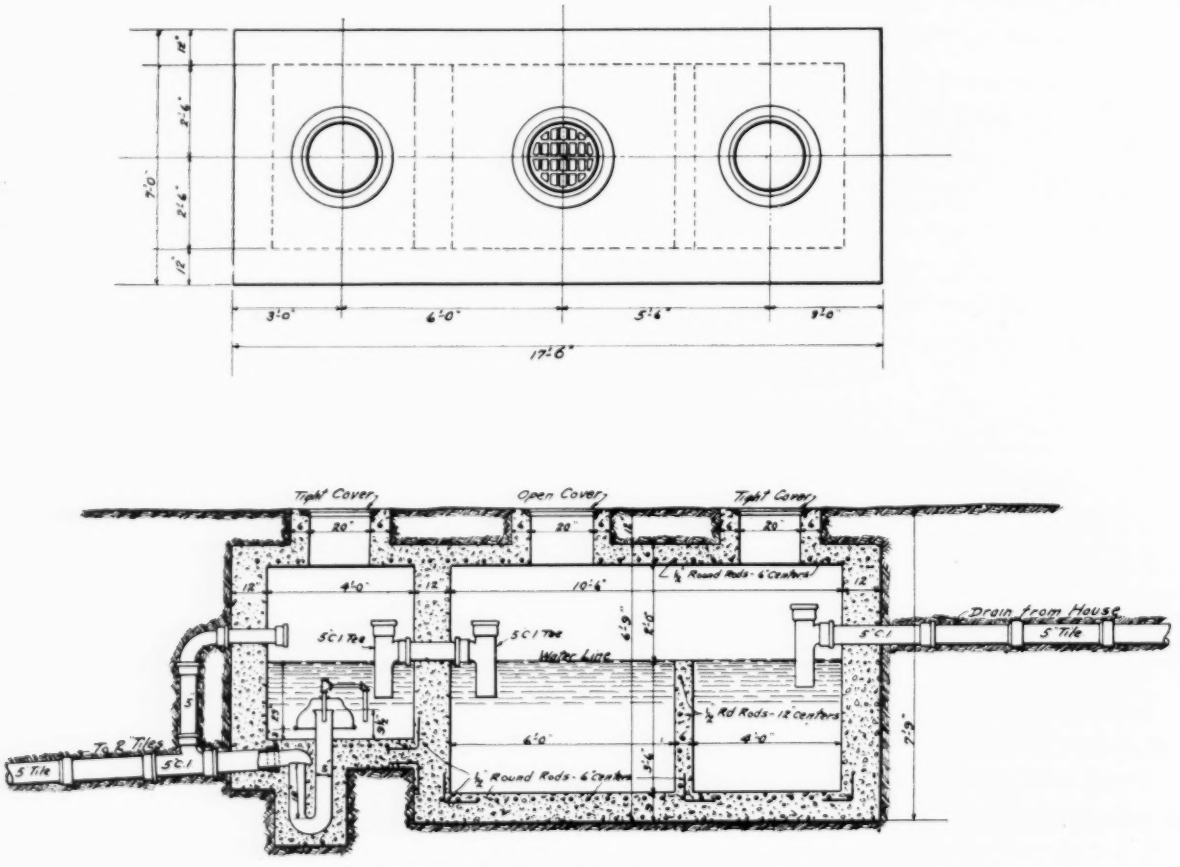


Fig. 4.—Design and Sizes of Septic Tank for This House.

Cleanouts should be placed where marked on plans and wherever possible; it is never a mistake to have too many cleanouts, they will sometimes be useful and save money to you, so be sure to put them in wherever the pipes change direction and at the foot of each line before it leaves the cellar. The soil pipe is carried along the ceiling and dropped near the wall in the same manner. The waste from the laundry is carried under the floor and a cleanout placed near the tubs; also a cleanout is placed in a brick pit and covered with a manhole frame and cover. This will enable you to clean the line all the way from the house to the septic tank.

Fig. 4 shows the design and sizes of the septic tank for this house.

The septic tank is divided into three chambers as

ond chamber which when full will flow through the two tees into the syphon chamber; these tees are dipped below the water line so as to leave the scum on the top of the water in the first chamber.

Each chamber has three manholes, so as to be readily accessible for cleaning purposes; there will be no odors arising from the tank if two of the covers are tight and one of them an open grating, for the air will be drawn into the tank and pulled through the soil pipe from the house and up through the soil stack to the roof where it will dissipate. This is caused by the stack being warm thus acting like a flue and drawing air from the tank; hence the tank will be ventilated thoroughly, and its location will not be known from its odors. The first chamber will need cleaning but very seldom, as the con-

stant flow from the house tends to break up the solid matter, so it will float away with the water into the absorption tiles.

The size is determined approximately as follows:

Assuming six persons to the house with an average consumption of 100 gallons of water per person gives a total of 600 gallons. Taking for example a chamber 6 ft. by 5 ft. equals 30 sq. ft. by 3 ft. 6 ins. high, equals 105 cubic ft. And as each cubic foot equals 7½ gallons of water, the settling chamber holds 787 gallons, or 25 per cent more than one day's supply. This is as it should be, for the sewage must be discharged while it is fresh. Then it is assumed that the syphon must act once or twice a day; in this case say, twice a day. So the syphon chamber is made capable of holding 300 gallons when it must discharge and fill up again. A chamber 23 in. by 4 ft. by 5 ft. equals about 2 ft. by 4 ft. by 5 ft., or 40 cu. ft., approximately, by 7½ gallons equals 300 gallons nearly. This enables the absorption tiles to have 12 hours rest between discharges.

The action of the syphon is briefly as follows:

When the sewage in the syphon chamber reaches a certain pre-determined height the syphon is set in operation automatically and continues to drain the syphon chamber until the sewage reaches the low level when the syphon is broken by the admission of air through a small air pipe.

Fig. 5 shows what is called the location plan of the house and surrounding grounds. The septic tank is shown about 100 feet from the house with the absorption field about 25 feet from the tank.

This scheme of sewage disposal is what is called the the "Sub-surface Irrigation System."

Briefly it consists of the following:

The Sub-surface Irrigation System consists essentially of two parts. First, an absolutely tight receptacle or septic tank for the wastes and sewage; second, a network of common two-inch distribution drain tiles laid a few inches below the surface of the ground with open joints, so as to permit the liquid to ooze out at numerous points. This network of pipes buried in the ground constitutes the irrigation field.

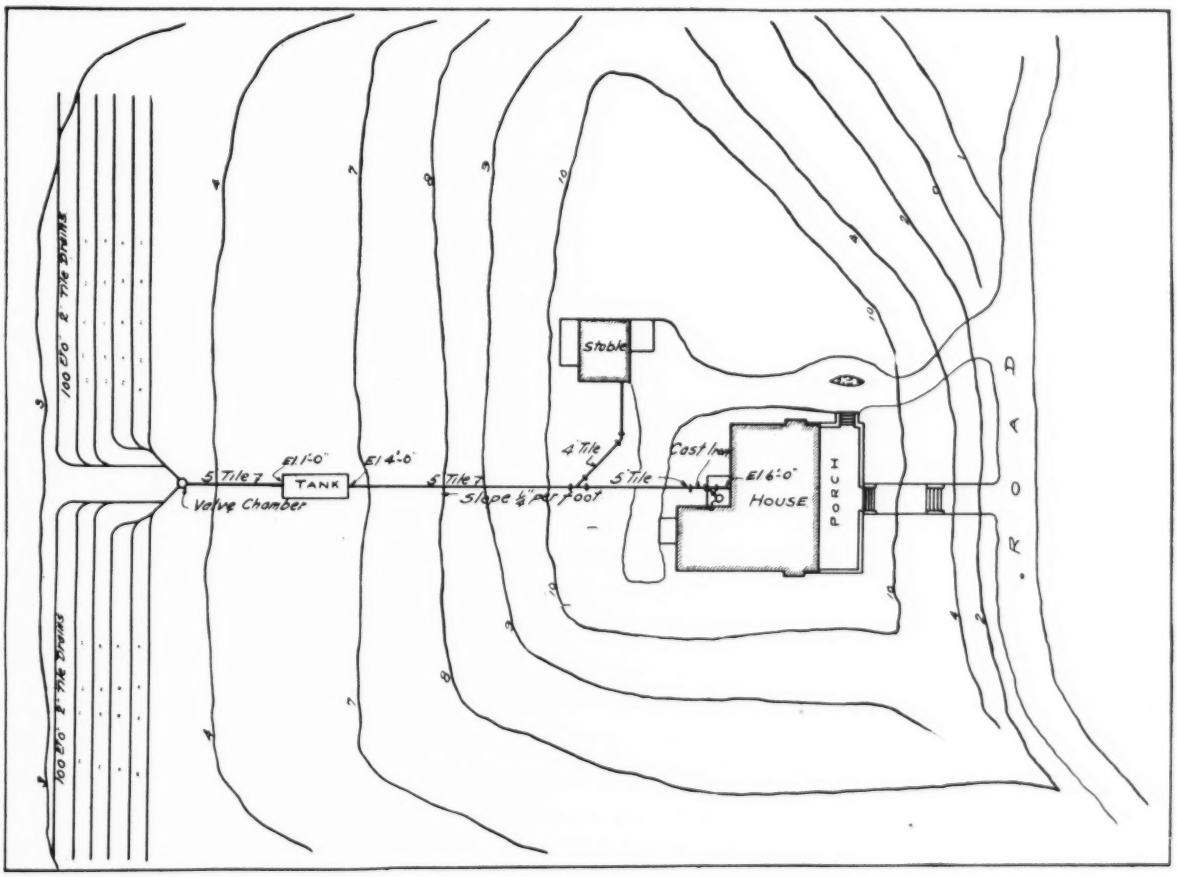


Fig. 5.—Location Plan of House and Surrounding Grounds.

It is important to insure the successful working of this system, that the discharge of sewage from the septic tank be **intermittent.** That is, instead of a dribbling stream, there will be a powerful rush of sewage in a big volume so as to secure an even distribution and filling up of pipes. This is the cause of the use of the automatic syphon previously described.

The valve chamber is used so as to use one field for one or two days, and then by turning the valve the other field will be used; this gives each field a chance to breathe or fill up with oxygen.

The number of feet of two-inch tiles that must be placed in each field depends entirely upon the condition of the soil. The writer has assumed in this particular

house that the soil is of a sandy or porous nature and has shown on each field one foot of tile for each gallon of water.

If the soil is of clay, trenches will have to be dug and filled with loose stones or gravel, and the tile drains placed in these trenches, as it is absolutely necessary in a system of this kind that the air must penetrate and mix with the sewage which oozes out between the joints.

For this system is based upon the well known fact that the well aerated layers of soil are **next to the surface,** the sub-surface, possess in a high degree the power of destroying organic substances buried in them, by nitrification and oxidation, aided during a part of the year by vegetation and assisted at all times by minute organisms or bacteria. The latter play an important part in the cycle of changes in nature.

"They are by no means purely useless or purely mischievous in the economy of nature," says Tyndall. "They are only noxious when out of their proper place. They exercise a useful and valuable function as burners and consumers of dead matter, animal and vegetable, reducing such matter to innocent carbonic acid and water. Furthermore they are not all alike and it is only the restricted classes of them that are really dangerous to man. One difference in their habits is mostly of special reference here. Air, or rather the oxygen of the air, which is absolutely necessary to the support of the bacteria of putrefaction is, according to Pasteur, absolutely deadly to the vibrios which provoke butyric acid fermentation."

Some of the objections against sub-surface irrigation are that it is sometimes feared that the land into which the sewage is continually poured will become saturated with sewage, its surface rendered wet or swampy, and the whole irrigation field converted into a large cesspool, spread out laterally instead of downward. There is, however, absolutely no reason to apprehend such trouble. Wherever the soil is not porous, under-drainage is essential and must be provided for. If properly carried out, all superfluous moisture in the ground will be removed. Aeration is another essential condition, and wherever it is neglected the soil may become saturated with sewage matters. By arranging for an intermittent discharge, with intervals of at least twenty-four hours between consecutive emptyings of the flush-tank, the soil is given ample opportunity for aeration.

Much apprehension is often felt lest such a system will not work properly in winter time, but experience with the system in the coldest parts of the New England States, where the system has been in continuous use for many years, has fully removed any doubts on this point. The warmth of the sewage has proven to be sufficient to keep the ground at the disposal field from freezing.

It is often objected that the intercepting chamber is in reality a cesspool. This is to a slight extent true, but nevertheless it is always advisable to build it, using due precaution in its construction to make it perfectly tight. It should be remembered that the liquid sewage in the intercepting chamber is constantly changed, a large volume of water passing through it every day. Although it retains organic waste matter partially putrefield, the amount is not to be compared with that in a cesspool. It should be mentioned here that, owing to these objections, attempts have several times been made to do away with the intercepting chamber, but in all cases where water-closets are used and their contents discharged into the tanks, it becomes imperative to prevent the solid portions of the sewage from clogging the syphon or the tiles.

Owners of country residences find an objection to the system in the necessity of emptying the intercepting chamber, claiming that this causes a nuisance. An answer to this objection might be that of the two evils of cleaning out a large ordinary open cesspool and the little intercepting chamber, the latter is far preferable.

It may be objected too, that sometimes the tiles choke and must be taken up and relaid. There is a possibility of such an occurrence, although this may only become necessary about every three years on the average.

In conclusion the writer might say that this system can be extended to a number of houses on the same principle or reduced in size to take care of small houses on a small plot of ground, and it is not new at all as the first one was built about 30 years ago and thousands of them are built and being built and working satisfactorily.

CONTRACTS AWARDED.

Dallas, Tex.—Kennison Bros. have been awarded the contract for the installation of a steam heating system in the courthouse at Kaufman, Tex. The consideration is $3,366. This firm has also secured the contract for the installation of a steam heating system in the Hotel Shelby at Terrell, Tex. This contract amounts to $2,098.

Chicago, Ill.—Lewis & Kitchen, 900 South Michigan Avenue, have been awarded the contract for the construction of a central heating plant for the high school building, the Lincoln building and the manual arts building, in Rock Island, Ill. The contract amounts to $21,521.

Champaign, Ill.—Johnson Bros. have been awarded the contracts for the plumbing in the Snyder house on Fifth Street and in the Auld house on West Church Street.

Wadena, Minn.—W. D. Bishop will install the plumbing system in Jesse Aldrich's new residence and J. M. Robb & Co. will install an up-to-date heating system.

Wheeling, W. Va.—John C. Haines will install a new plumbing system in the Central school building. The consideration is $3,700.

Richfield, Utah.—Bean & Bean have secured the contract for the installation of sanitary drinking fountains in the public school in this city.

Moline, Ill.—The Moline Heating & Construction Co. has been awarded the contract for the plumbing and heating in the R. C. Leedy building in this city. The contract amounts to about $6,000.

Ottawa, Ill.—J. M. Dougherty has secured the contract for the heating of the new addition to the Western Clock Co's. plant at La Salle, Ill. The contract calls for 20,000 square feet of radiaion.

Spokane, Wash.—The Selb-Hutton Co. has been awarded the contract for the installation of an up-to-date plumbing system in the new city hall in this city. The consideration is $10,726.

Champaign, Ill.—The Carson-Payson Co. has been awarded the contract for the installation of plumbing and heating systems in the new Sullivan building on North Neil Street.

Terre Haute, Ind.—D. W. Watson's Sons have been awarded the contract for the plumbing of the new public school at Freelandsville. Consideration, $1,340.

Eveleth, Minn.—The Northern Plumbing & Heating Co. has been awarded the contract for the plumbing of the city auditorium, now being built on Jackson Street. Consideration, $1,582.

"Plumbing for Profit"—Part XI

The Lost Trail—Why the Plumbing Industry Has Refused to Follow the Trail of Least Resistance in the Retailing of Goods

By J. J. Cosgrove

"Fools argue, wise men discuss."

This is the concluding chapter of a series of articles in which the author has presented many interesting and timely topics for the consideration of "Domestic Engigeering's" readers. If you disagree with the author in his contentions as set forth, "Domestic Engineering" will publish any pertinent point which you might present—Editor.

I well remember the first lesson I ever had in woodcraft. I was out on a trip with an old timber cruiser and prospector in an almost endless forest of pines stretching hundreds of miles in all directions. Most of the territory we were operating in had never been traversed, except by Indians, and in a few places by government surveyors, so when we went anywhere we blazed a trail.

As it would be necessary for myself and companion to be separated from each other much of the time, working along independent lines, I was admonished to stick close to the trail and never under any consideration try to go anywhere without either following one of our old trails or blazing a new one. But the most important and valuable advice I was given was that in case I was following a trail and lost it, not to proceed with the hope of picking it up later by chance, but to retrace my steps carefully to the point where I had deviated from the trail, then beat back and forth until I had picked it up. I started out from my camp one morning for one about ten miles distant along a trail we had run and blazed about three weeks previously. I had proceeded perhaps a mile or so, when passing one mark indicating I was on the right track, I continued in a straight line for some distance without sighting a further blaze. Ignoring my advice and believing I could pick up the trail further on, I continued in my course until the conviction was forced upon me that I had lost the trail. I had deviated from my course and could make absolutely no headway, although I could travel over a lot of territory, until I was again put right. Still thinking I could avoid going back to the point of divergence, which was perhaps a mile and a half away, I marked my position and the direction whence I came, then started beating back and forth across what I thought ought to be the trail, in the hope of picking it up. Vain hope! After spending some few hours and almost my entire stock of energy in this useless task, I reluctantly shouldered my pack and carefully worked back to where I had originally lost the trial. Five minutes later I was bounding along the right course trying to make up for the time lost.

In the plumbing business we are in the same position I was in when I lost myself cruising in the woods. We lost or got off the trail back in 1884 when we adopted that clause of the Baltimore Resolutions prohibiting us to sell without installing the goods. Since then, figuratively, we have been beating back and forth trying to pick up the trail, but making no headway, although expending a lot of energy. Now we must retrace our steps to the point where we left the broad highway of commerce and picking up the trail again, follow it to the end.

We had not gone far from our business trail when we realized that something was wrong. Something had gone amiss with our calculations, we hated to admit the truth that we were off the track, and would have to retrace our steps to get started right. We had hoped and expected that when we refused to sell without installing, it would mean more business and greater profit for us. Instead, we commenced to lose business immediately, the gas fixture business leaving in one lot or installment, while the store business fell off in like proportion. This we accepted philosophically, for if we had no store business we would not have to rent an expensive store or carry stock, and, although engaged in business, would have but little capital tied up in goods. Ideal to look at, but we forgot the law of compensation which decrees that the relation between the buyer and seller is absolute. If you take in one place, you give in like proportion in another. In this case, while we did not have to tie up much capital in stock simply ordering what materials we wanted when we had a contract for its use, that condition was likewise true of others. And the others were not slow to see the advantage to them. They had now opened to them a roadway to business which before had been closed with a golden gate, for when the plumber was a merchant and had to carry stock, it required capital to engage in business. Now under the new order of things, money was not necessary, and competition commenced to multiply almost at the rate of geometrical progression, so that while the volume of business was decreased by the loss of certain side lines, what remained was divided up among a greater number so that competition brought down still further, both the amount of work we did individually, and the profit therefrom.

But even then we did not see the error of our way. We had set out to legislate large profits and big business into our shops, and could not yet see the fallacy of that course. The steps were right, we argued, but the stride was not long enough. What we wanted and would work for was more laws—plumbing laws. The large majority of master plumbers had the health of the community at heart. But besides this, we also believed it would increase the bulk of business. Some few worked hard for the measure because they saw even greater possibilities in it for themselves. Their hope was that laws would be passed making the contracting plumbers—that is, the OTHER contracting plumbers—do the work according to certain prescribed ways, while they, themselves, could stand in with the powers that be and slide

through with enough less done to give them the inside track in landing work. On the whole, though, the craft was conscientious in wishing to better plumbing for the good of the public health, although they were not blind to what they considered would be the advantages following such a move. Suffice it here to point out that ALL of the legislation we have bent our energies to during the past quarter century, have not done one-thousandth part as much for plumbing, either to increase the volume of business, or to raise the standard of work, as one large manufacturing concern has by its campaign of publicity, bringing the benefits of plumbing goods home to the consumer, and showing the possibilities both artistically and usefully to the architects.

. Just bear that in mind when trying to figure out what is the best system for the plumbers to adopt as a guide for the future. The legislative effects we have pinned our faith to have proven failures. Under the laws we have made no appreciable headway. Had it not been for publicity carried on by the few, the plumbing business would be worse off today than it is. What is the better policy, then, publicity and business, or laws and legislalation? Just consider what a commanding place we would occupy in the business world today if instead of following the logical trend of the Baltimore Resolutions and running to legislation, we had spent that quarter century in teaching the laws of business, not only the legal statutory and common laws, but the laws and rules of buying, selling, advertising, banking, and all the branches that go to make up a first class business education.

But the enactment of plumbing laws had another effect we could not foresee or guard against. Before the enactment of plumbing legislation, every plumbing contractor was rated in his community according to the quality of the work he installed. In the plumbing business, as in all other lines, there are good, bad, and indifferent contractors. But under the old order of affairs, the bad ones were known in their neighborhood, and when anyone wanted work done they selected their plumber according to the work and materials they wanted installed, and the price they wanted to pay. This is but stating in another way that the GOOD plumbers were known and appreciated, and that there was then a premium on good workmanship and materials. Those who were in the business then can well remember that such was the case. So it is to a limited extent now, but in any city where there are plumbing laws, try to tell an owner that he ought to let the plumbing to one firm instead of another because the one recommended does so much better work, and see how quickly he will let you understand that he knows ALL plumbing work must be done alike because we have plumbing laws and plumbing inspectors to see it is so.

Of course the owner is wrong, but that does not alter the case. At the same time plumbing laws have been beneficial in other ways, and we want them in force where they will do good to the public. It is our attitude towards them which must be changed.

But still, with all our legislation, conditions have been growing worse instead of better. Those unsatisfactory conditions have been clamoring for us to go back and pick up the lost trail; but stubbornly we head towards destruction because we have not realized we were on the wrong track. After suitable plumbing laws had been enacted, and inspectors appointed to see that they were enforced, we were sure we had done everything we could to make the business ideal. Before the laws were enacted, it took time, patience, labor and money to establish a business. The moment a new contractor applied for permission to estimate on work, he was staggered with a request to give references to people he had done work for, and of the work he had done. Under the new code of affairs, he simply points out that it is not a matter of willingness or ability with him or any other contractor any more; that laws have been passed for the purpose of seeing that all plumbing is done in just such a manner no matter who does the work, and that those laws put all plumbers on the same level; that all that is necessary now is to accept the lowest bid—the plumbing inspector will do the rest. That answer looks unanswerable, because it looks true on the face of it. If that is not what plumbing laws and inspectors are for, the public might well ask themselves what they are for. And while the old established plumber was "waiting for something to turn up" the work was gobbled up by the hustlers who went out after it. This is no discredit, but on the contrary a credit to the hustlers. They are the kind we need and there is room for lots of them in the retail plumbing business. All that I cite the case for is to show what a great leveler were the plumbing laws we worked so hard for, and expected so much of, and to emphasize the fact that laws which level always do so, not by elevating the lowest to the highest, but by dragging the highest down to the lowest or to an intermediate station. In our own case, instead of building up, it tore down the **business** end of plumbing, just in proportion as it built up the **practical** end. Now what we want is to modify conditions so they will still build up the practical end, but build up the business end in proportion.

But still the legislation and plumbing laws did not turn trade in our direction, and instead of taking to advertising, salesmanship, selling without installing the goods, and other methods of successful merchandising, we again turned our attention to laws and legislation so that at present in a majority of cities having plumbing codes, an applicant for permission to engage in the plumbing business must pass an educational test of some kind before he is qualified and receives permission to proceed with this commercial undertaking. Out of the records of 35 cities having plumbing codes, an examination discloses the fact that in 23 of them the master plumber must pass a satisfactory examination as to his skill as a workman and his theoretical knowledge of plumbing.

There can be no doubt but that this legislation is in the interest of the plumbers and the plumbers only. The enactment of plumbing laws with the appointment of inspectors to see that the laws are enforced, while intended to benefit the plumbers was at the same time of equal or greater benefit to the plumbers when properly formulated and enforced. In the case of requiring the master plumber to pass an examination, on the other hand, there is no benefit to the public. Nor was one ever intended. True to get the necessary laws passed the argument was advanced that it was the same as requiring a doctor to take a state board examination before engaging in the practice of medicine. There is a wide difference between the two cases, however. In the case of a doctor, if he lacks the necessary skill and knowledge, a train of illness and death will follow in his wake, for there are no safeguards back of the doctor but his knowledge and skill to protect the public.

In the case of contracting plumbers, on the other hand, there is no longer a reason—outside of a selfish one—for asking him to stand or pass a satisfactory examination, and any educational qualification imposed upon him is, and must of necessity be, to limit those engaged in the business to practical plumbers. For the contracting plumber is merely a business man; nothing more, nothing

less. As such he is concerned principally in making a profit on his work and establishing a big business. If there were no plumbing laws and inspectors to enforce them, but the plumbers like the doctors were put upon honor to live up to certain ethical rules of procedure, an educational qualification would be desirable to insure their having the necessary knowledge to make no blunders. But as the case stands, the public does not look to the plumber for protection. There are laws made for that very purpose, and inspectors to enforce the laws, so it does not matter to the public whether the work is done by an expert or a botch; by a conscientious workman or a "putty plumber." If the work is not done right, the inspector will not pass it and the contractor must tear it out, and keep tearing it out and doing it over again until it complies with the code. It will be seen then that an educational test was not, and is not now, necessary for the protection of the **public,** therefore, there can be but one logical inference, and that is that licensing of the plumber is required solely for the benefit of the **plumber.** But again the method was wrong. It was just another beating back and forth to find that lost trail. We knew we were wandering around in a wilderness, but heretofore have not realized what was wrong. Now, like a chart to that wilderness, this article is intended to show how and where we are lost. And bear this in mind. It is not the trail that is lost, it is us. The trail is where it has always been, and we cannot bring it up to us. Instead we will have to retrace our steps to the point where we diverged from it, and there plan out a future course, with greater care than before, using the mistakes we have made in the past to guide us through the darkness of the future.

Let us get away from laws and legislation. There is little in it for anybody but the lobbyist and lawyers, and every law enacted circumscribes the business around, and narrows its field almost to the vanishing point. When legislation is known to be bad for the trade to those who have studied the subject carefully, it is to be regretted that efforts have been made in many quarters, and have been successful in some, to pass a law requiring journeymen plumbers to pass a satisfactory examination as to their skill as workmen and knowledge of sanitation before permitting them to work at their calling. Such activity is to be regretted because it is misapplied and misdirected. The more the plumbers legislate about their business, the worse they make it, and the further they drop in the estimation of the discerning public. I am speaking now of senseless, wire-pulling, hair-splitting legislation which benefits the plumbers and the plumbers only, such as requiring the master plumber and the journeyman plumber to pass an examination.

And what does it amount to in the end! It is not so much the plumber's **knowledge** of the principles of plumbing and his ability to do the work that matters; it is his **willingness** to do good work. And no amount of lawmaking can legislate honesty into a man, or prevent him from doing skin work if his talents and tastes run in that direction. Neither will an examination disclose the relative honesty of those examined and point out what ones will do good work under all conditions thereby becoming an ornament and credit to the craft and distinguish those who will always run as close to the wind as they can in sailing the sea of technicality when applying the various plumbing codes.

Because you have taken part—all with a good intention—in having some of the laws enacted which I have condemned here, do not get in a rage and condemn the suggestions I have offered. Because I say so does not necessarily make them wrong. What we want to find out is whether or not they are. Sit down now for a half hour and try to reason out which is the better course to follow in building up a system under which to operate. Whether it is better to continue pinning our faith to that "Thou Shalt Not Sell" clause of the Baltimore Resolutions, backing it up and enforcing it with legislation, or whether it would not be still better to break away entirely from those methods which have failed in the past to bring prosperity to the plumbers, and adopt in their stead a system of education based upon merchant principles. That is, adopt advertising, salesmanship, suggestion, selling to the public, inviting them to our stores, making the stores attractive, and all the other arts resorted to by successful retail merchants. Remember, once we get the public coming to our place of business again, it is not only plumbing goods proper we can sell them, but we can likewise make our expenses, or better still off the side lines we carry. Consider for a moment what an institution the drug store is in any locality. They make profits on their goods that would put the plumber to shame, and the volume of business they do is almost beyond belief; yet, they have absolutely no protection, and deal in goods, every one of them, that can be had in thousands of places throughout the city and many within reach. There is very little price-cutting in that line, and their entire success is due to the fact that they **attract** people to their stores, even when they lose money on a purchase. There is not a drug store in the country worthy of the name at which you cannot get stamps and postal cards; yet, those goods of necessity are sold at a loss, and are kept solely for the accommodation of the public and their customers. That is the spirit of business enterprise we must show before we can get back into the profit column of retail business. But the task should not be a hard one, for the plumber has more interesting wares than any one else when properly displayed, and the public will gladly flock to our places of business when we get rid of that frigid atmosphere and make everybody who enters feel they are welcome.

We have everything in the world to succeed with, all we need to do is change our methods to win.

NEW BUSINESS VENTURES.

Los Angeles, Cal.—The W. D. Newell Plumbing Co. has been incorporated with a capital of $50,000. The incorporators are: W. D. Newell, William Henderson, G. W. Rosso, W. J. L. King, T. G. Johannsen and John T. Jones.

Toledo, O.—The Wacker & Johnson Co. has been incorporated with a capital of $10,000 to conduct a plumbing business. The incorporators are William G. Wacker, George A. Jackson, John H. Sanzenbacher, N. M. Turner and C. F. Watts.

Beeville, Tex.—The Beeville Windmill & Plumbing Co. has been incorporated with a capital of $20,000. The incorporators are: J. W. Klipstein, L. E. Potter and J. H. Hearns.

Richmond, Va.—The Acme Plumbing Co. has been incorporated with a capital of $25,000. The officers of the company are: President, Frank A. Cosby; vice-president, S. T. Tinsley; secretary and treasurer, V. E. Tinsley.

Wichita Falls, Tex.—The Wichita Plumbing Co. has been incorporated with a capital of $10,000. The incorporators are: S. T. Scaling, S. R. Staniforth and W. W. Coleman.

Cleveland, O.—The Kisthart Plumbing & Heating Co. has been incorporated with a capital of $10,000. The incorporators are M. R. Godfried, M. Marquard, F. P. Shumaker, D. P. Mills and M. W. Spear.

Chicago Master Plumbers and Guests, Arriving in Michigan City, Ind., and Being Directed to the Lake Front Park.

Annual Outing Chicago Master Plumbers' Association

To Michigan City by S. S. Theodore Roosevelt—The "Chicago Crowd" Went in Pursuit of Pleasure on the Occasion of the Association's Annual Picnic and Outing

The Event Was an Enjoyable One—These Pictures Indicate It.

Nearly five hundred members and guests of the Chicago Master Plumbers' Association were on board the S. S. Roosevelt when the steamer left the Clark Street Bridge of the Chicago River at 9:30 o'clock on Wednesday morning, June 26. This occasion was the annual outing and picnic of the Chicago Association, which for many years has been held in the Indiana city, extensively advertised as the "Coney Island" of the west, situated in the none too beautiful spot on Lake Michigan's shore, surrounded by sand dunes and numerous other of nature's peculiarities which have a tendency to attract attention rather than to please the eye.

Ideal weather prevailed throughout the entire day and the trip across the Lake was perhaps the most pleasant feature of the entire occasion. As one prominent master plumber expressed himself that the only real enjoyment out of such an occasion was the fact that the lake trip assured temporary absence of dust.

The ladies and children on board the boat enjoyed the day's outing perhaps more than any of the others who attended. The boat arrived in Michigan City in advance of schedule time and the picnickers were happy to proceed to a park closely adjoining the landing place, with their heavily laden baskets of picnic paraphernalia such as is generally provided for the satisfaction of the inner man on occasions of this kind. After passing several hours in this delightful little park and in the sand on the beach, the crowd proceeded to the base ball park and witnessed the national pastime as indulged in in plumbing circles.

The base ball teams were comprised of plumbing and heating salesmen who call on the Chicago city trade, and a team of Chicago Master Plumbers. Every stage of the seven inning contest was exciting and full of thrills. The struggle lasted its scheduled seven innings and the supply men were victorious by a score of fifteen to five.

The story of the day's outing and many enjoyable features of the occasion is best told in the pictures on these two pages. This conveys to the mind of the reader the activities of the picnickers and the lively spirit which prevailed through the whole occasion.

Returning to Chicago, the steamer left Michigan City at 4:30 and arrived at its destination in safety, and all those who had participated in the day's outing, while in many cases prone to declare that they had become fatigued, still maintained that the affair was a big success.

JOHN H. MORAN AND JAMES H. DOODY HONORED.

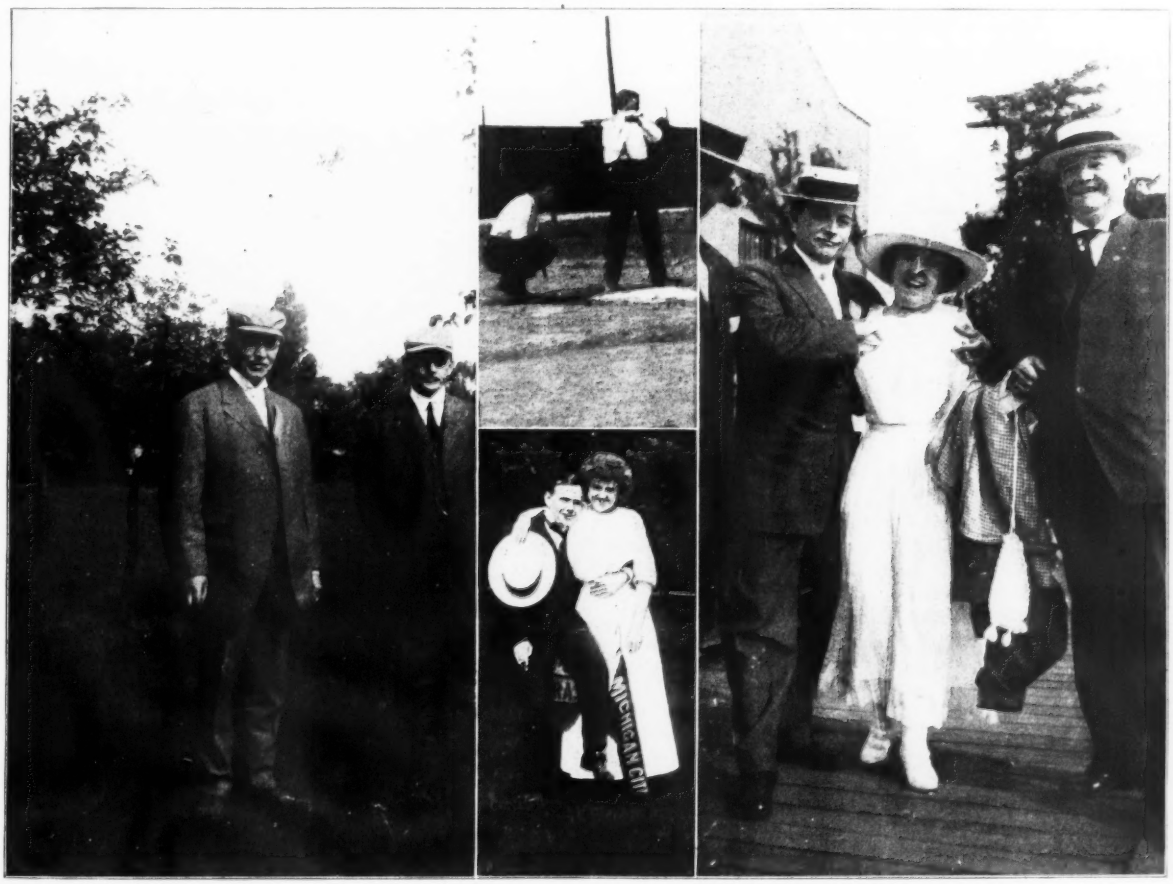
On Wednesday evening, June 26, the Master Plumbers' Association, of Albany, N. Y., held a special meeting at its rooms, 119 State Street, to welcome Frank B. Lasette, president, and John J. Hannegan, secretary, of the New York State Association of Master Plumbers, accompanied by John F. Knaupp, of Troy, and John F. Sheehan, of Schenectady, members of the executive committee of the state association, and B. J. O'Donnell, of Syracuse, past state president.

The real object of the official visit was known to but a few of the members of the Albany local, it being the plan to keep the matter more or less a secret, until the proper moment.

Local President Thomas F. Nolan was detained from attendance, owing to the death of his father, which occurred on the afternoon of the meeting. On his request, Past State-President John H. Moran presided and welcomed the visitors in good style. He invited the state officials to address the meeting, and among those who spoke were President Frank B. Lasette, Secretary John J. Hannegan, B. J. O'Donnell, Horace F. Westcott, John E. Dugan, John F. Knaupp and John R. Sheehan.

On adjournment, an invitation was tendered the visitors to accompany the Albany officers and members to Keeler's hotel, wherein a banquet was served in the "Dutch" dining hall of the hotel, and heartily enjoyed. Here likewise entertaining speeches and stories were expounded by the guests of the evening as well as by a number of the local members, among others who spoke being John J. Britt, Herman Shoor, Jeremiah Kieley, A. J. Eckert, Jos. O. Stapf, J. H. Moran, jr., Wm. S. Dugan, and Jacob Noord. The toastmaster, Frank F. Schimpf, former state secretary, was at his best and was busy every minute.

The early morning hours having stolen upon the happy banqueters, and the moment of departure being nigh, President Lasette obtained the floor and in a well chosen speech, full of just complimentary assertions, presented Past State President John H. Moran with a very fine scarf pin. To say that the recipient was taken with surprise is expressing the matter mildly. He was completely confused, but sufficiently recovered to respond in a few appreciative remarks, thanking President Lasette and the New York State Association for the remembrance, and assuring him that he would wear the gift with endless pleasure. As Mr. Moran concluded, John F. Knaupp arose and in a neat address sprinkled with a goodly measure of compliments, then presented former State Secretary James



In the Left-Hand Picture are C. J. Herbert and Chas. C. Breyer, Prominent Chicago Master Plumbers Who Attended the Annual Outing—In the Center is Shown Incident of the Outing as Found by the Camera Man—The Left-Hand Picture Shows How a Master Plumber and a Salesman Can Co-operate.

H. Doody with a similar pin. Mr. Doody, also very much surprised, acknowledged the compliment with that natural born grace which is all his own, and to the great delight of his fellow craftsmen. The pins were made up of a cluster of diamonds encircling a central stone, that of Mr. Moran being an emerald and that of Mr. Doody a ruby.

The banquet being over and the surprise settled down, Toastmaster Schimpf in a closing address declared the affair closed. Altogether it was a most pleasing affair and one that everyone present enjoyed heartily.

ANNUAL OUTING OF INDIANAPOLIS MERCHANT PLUMBERS' ASSOCIATION.

On June 22d, the Merchant Plumbers' Association of Indianopis, Ind., held their annual outing and chicken fry at the Home Circle Pleasure Club, Broad Ripple, Ind.

The Annual Outing and Chicken Fry of the Merchant

The occasion was enjoyed by over two hundred members of the organization and their guests.

The day's entertainment included various amusement features provided for in a specially arranged program. These special features included a fat man's race which was won by Harry O'Brien, of the Shirley Radiator Co. from a field of eight contestants. Another feature of the program which provided extensive amusement and entertainment in the way of an unique athletic contest was a race for "skinny" men, this race being won by Clarence Warner, of Hayes Bros. & Co. This event was followed by a boxing contest between Willie O'Rourk and Walter Keffer. The officials of the boxing contest were: Louis Skinner, referee; Geo. Geis, time-keeper.

The members of the Merchant Plumbers' Association were assisted in making the day's outing a success by all of the plumbing inspectors of Indianapolis and many of the supply men whose activities center in that territory. Among the supply men present were: Mr. McGill and Mr. Holden, of the Crane Co.; Mr. Wilson, Mr. Dunn and Mr. Barry, of the Central Supply Co.; Mr. Gardner, Mr. McIntire and Mr. Strong, of the Indiana Supply Co.; Mr. Claude McElwaine and Mr. Castline, of the Van Camp Hardware Co.; Mr. Dow, of the McLain Boiler Co.; Mr. Rowley, of the H. Mueller Mfg. Co.; "Long" Charley Ruehrwein, of the John Douglas Co., and Mr. Kissell, of the American Radiator Co.

Wm. Wooley, of Evansville, Ind., president of the State Association of Master Plumbers, was also a guest at the outing. Mr. Wooley enjoyed the occasion immensely and was afforded an opportunity for putting in several extensive boosts for the state organization.

At the conclusion of the day's festivities, the association held a meeting for the consideration and presenting of names of members who were to be candidates for office at the annual election which was to take place on Monday night, July 1st. The names of James Hayes, Charles Holtman and Geo. Geis were presented for the office of president. Geo. Rickes and A. W. Buschman were the candidates for vice-president. Oscar Herman and H. W. Denges were candidates for secretary and James Kreglo and L. Breimburg for treasurer. The association named for election as delegates to the National convention at Salt Lake City, A. W. Bushman, J. C. Ertle, Alex. Ramsey, C. D. Locke and T. J. McCarthy.

MAINE MASTER PLUMBERS' ANNUAL OUTING.

Elaborate preparations are being made for the annual outing of the Maine Association of Master Plumbers which is to be held on Long Island, Portland Harbor, next Monday, July 8th. A shore dinner and clam bake will be the chief features on the program. A short business session will also be held. Patrick A. Mahoney and Frank E. Davis, members of the Portland Association, are making the plans.

Kingfisher, Okla.—Morton & Denning have sold their plumbing establishment to Frank Jungles, who will continue to conduct the business at the same location.

THREE-INCH SOIL-PIPE FOR WATER-CLOSETS.

By Thos. M. Landers, Inspector of Plumbing, Richmond, Va.

I am aware of the fact that many of the advocates of the use of three-inch soil-pipes have made numerous tests, in many instances have had such systems installed and that these systems have been used for several years with good results; yet, I must say from my own experience, I am not in favor for many reasons of reducing the size of soil-pipes from four inches to three inches. From an economical standpoint the difference in cost of installation between a four-inch and a three-inch soil-pipe to the owner is of very little significance compared to its many objectionable features.

Danger of Siphonage with Three-Inch Pipe.

It is a well-established fact that by reducing the size of soil-pipe to three inches the danger of siphonic action upon the seals of all smaller traps is greatly increased. The siphoning of these traps, even under our present system, is the very thing that we all know we have been endeavoring to prevent by the very expensive, and I must say experimental, method of back-venting. This has itself utterly failed in its object of preventing siphonage in many instances. This occurs especially where there is an excess of frictional resistance produced by numerous back-vent fittings that cannot be avoided in installing the work. Therefore, for this reason alone I should deem it unwise to favor a soil-pipe less in size than four inches for water-closets, for, according to my judgment, it would be inconsistent with good plumbing practice to produce just such a siphonic condition as we have been trying to prevent.

Danger from Pipes Being Too Large Also.

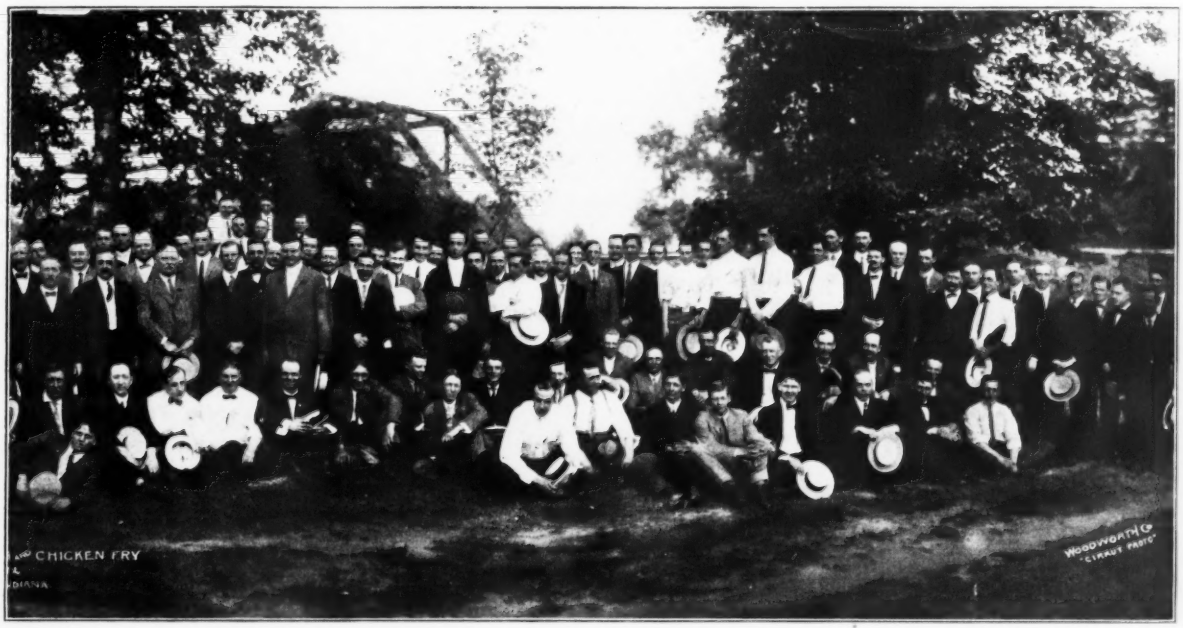
Now, what may come next in the minds of those who are recommending the three-inch soil-pipe proposition, and it may not be long before we will hear them express it, is "Why, let us advise that all waste-pipes be of a sufficient size so as to be a protection against siphonage, or let us increase the size of all vent-pipe connections, so as to overcome the danger of trap siphonage produced by the introduction of three-inch soil-pipes." This would be adding still more expense to the already bungling method of back-venting. A soil-pipe can be too small for the service it is to render as well as too large and there is a limit to all things. Some of you may differ with me, but I think that a four-inch pipe is the smallest in size to give satisfactory results.

Liability of Three-Inch Lines to Chokage.

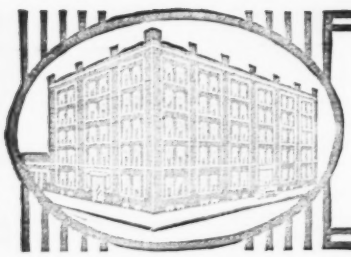
Another very objectionable feature is the liability to chokage of three-inch soil-pipes and fittings. Every one knows that in the construction of plumbing systems certain fittings must be used to suit the conditions. If these fittings are but three-inch you then increase the danger of stoppage.

I realize that many will say that a water-closet-bowl being much smaller than four inches, there is no need of the soil-stack being four inches; that whatever would pass through closet-bowl would pass out of the three-inch pipe. I certainly must differ on that point. From my experience there are many things that will pass a four-inch fitting unobstructed that will surely obstruct a three-inch fitting. Take, for instance, a collection of rags accidentally thrown into a water-closet-bowl. The bowl being of a very smooth earthenware, the probabilities are that many if not all of these rags will pass out into the soil-pipes, but when they come in contact with the numerous three-inch fittings, especially on horizontal runs, the trouble will begin.

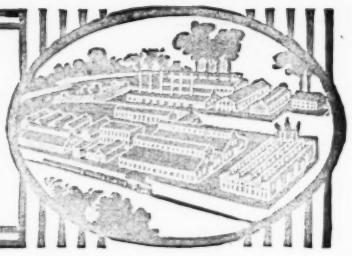
I admit that under certain conditions three-inch soil-pipe may be used with good results. In some instances where great care is taken in looking after the plumbing fixtures, so as to prevent the pipes being choked, it might be satisfactory, but if such a system were to be used to take the place of four-inch soil-pipe under all conditions it would certainly cause in my own city endless trouble.



Plumbers' Association of Indianapolis, Indiana.



News of Interest Among the Wholesalers and Manufacturers



NOW THE REAGAN BRASS & MANUFACTURING CO.

The Reagan Co., Cleveland, O., manufacturer of plumbing specialties, has changed its name to the Reagan Brass & Manufacturing Co.

HAS OPENED BRANCH OFFICE IN PITTSBURGH.

The Brownell Co., manufacturers of boilers, feed water heaters and tanks, at Dayton, O., opened a branch office at 1418 Oliver Building, Pittsburgh, Pa., on July 1st. The office is in charge of B. S. Reierer.

WILL MANUFACTURE PLUMBING SPECIALTIES.

The Martin Manufacturing Co., of Fort Wayne, Ind., has been incorporated with a capital of $1,000 to manufacture plumbing specialties. The incorporators are: Emmett Martin, J. Eugene Martin and E. H. Creigh.

WILL MANUFACTURE PLUMBING SPECIALTIES.

The Cleveland Brass Manufacturing Co., Cleveland, O., has been incorporated with a capital of $150,000 to manufacture plumbers' brass goods and plumbing specialties. The incorporators are: H. F. Barrett, W. H. Smith, Charles Higby, Otto Starek and A. A. Lutton.

PERSONAL MENTION.

J. J. Wade, of Chicago, one of the nestors of the Chicago Master Plumbers' Association, and honorary member of that organization and of the National Association of Master Plumbers, is reported recovering from a slight illness at Lorne Park, Ont., Canada, where he is at present spending his summer vacation.

* * *

Frank H. Kuhn, who has been in charge of the show room of the Fort Pitt Supply Co., at Pittsburgh, Pa., has severed his connection with that concern and moved to Chicago, where he will open an office as manufacturers' agent for the sale of plumbing supplies and specialties to jobbers.

* * *

Mr. Camp, of the J. L. Mott Iron Works, of New York City, has just returned from a month's trip through the western and the middle states. He visited many of the larger cities and reports business to be very good. He says that he found business conditions much better in the West than in the East.

* * *

Walter R. Darrow has just been appointed to represent the D-C Manufacturing Co., of Canton, O., in Buffalo, N. Y. Mr. Darrow is one link of a strong chain of sales representatives which this company is securing in practically every town of importance to promote the sale of its plumbing specialties.

THE HARRIS PUMP & SUPPLY CO. ENLARGING ITS CAPACITY.

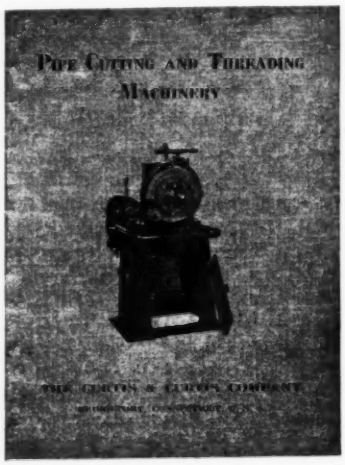
The Harris Pump & Supply Co., of Pittsburgh, Pa., has leased an additional warehouse on Second avenue, in that city, to take care of its steadily increasing trade. The company has re-arranged its showroom, creating an effective and modern display of plumbing and water supplies.

HAD INTERESTING EXHIBITS AT CONVENTION IN BRIDGEPORT, CONN.

At the seventeenth annual convention of the Connecticut State Association of the N. A. S. E., held in Bridgeport, Conn., June 28th and 29th, the following concerns manufacturing the lines represented by "Domestic Engineering" had very interesting exhibits of their products: H. W. Johns-Manville Co., New York; Armstrong Mfg. Co., Bridgeport, Conn.; Smooth-On Mfg. Co., Jersey City, N. J.; J. H. Williams & Co., Brooklyn, N. Y.; American Steam Pump Co., Battle Creek, Mich., and The Bashlin Co., Warren, Pa.

CATALOGUE OF EXCEPTIONAL MERIT.

The Curtis & Curtis Co., of Bridgeport, Conn., have issued a new catalogue which is edition No. 14, possessing exceptional merit, both in artistic arrangement and comprehensive review and illustrations of their products. The



Front Cover Design of the Curtis & Curtis Co's. New Catalogue.

front cover page illustrated herewith is exceptionally attractive in design, being embossed both in lettering and machine illustration. The frontis-piece of the catalogue is a beautiful illustration of the plant of the Curtis &

Curtis Co. This frontis-piece is followed by an introduction on page 3 calling attention to the merits and special features of every self-contained pipe cutting and threading machine illustrated and described in the book.

A THING OF BEAUTY.

The Pfau Mfg. Co., of Cincinnati, O., are mailing to the trade a unique booklet, cover page of which is reproduced in this column. This booklet contains every object of the new Pfau White-Copper tank, and there is illustrated not only the tank in itself but sectional views

Front Cover Design of the Pfau Mfg. Co's. New Catalogue.

showing the tank action and a comprehensive review of its salient features.

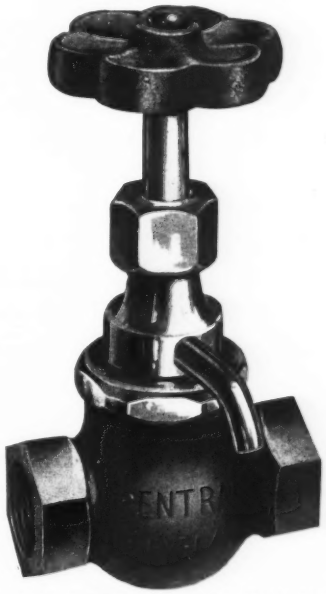
THE QUICK-PRESSION STOP, AND WASTE VALVE

Early in its history the Central Brass Mfg. Co., of Cleveland, O., devoted much time and study to the making of a stop and waste valve which would give perfect satisfaction under all conditions. Their efforts resulted in the placing on the market of the Quick-pression stop and waste valve. The reception this valve obtained in the trade brought the question to the company: "Why not an entire line of Quick-pression work?" Acting upon this suggestion it was only a matter of a comparatively short time before the present line of Quick-pression work was brought out.

Like all Quick-pression work the stop and waste valve is practically fool and wear-proof. It depends upon no springs to shut off the waste but rather upon a sure-acting plunger that enters and closes the waste chamber the instant that the pressure is admitted. This feature is worth noting, since it means that a Quick-pression stop and waste valve simply cannot bathe you in a stream of icy water when you are turning on the supply of main water. Its action is as sure as death and taxes, yet it turns easily every time. It doesn't matter where it is located as the universal joint permits turning the waste in any direction. It's all the same to Quick-pression—an easy quarter turn and the job is finished; no perspiration and twisting of lead connections with this valve.

Although the Quick-pression stop and waste valve has an action that is ease and simplicity itself, its bottom seat closes the valve as tightly as the top seat closes the waste-chamber.

A Quick-pression stop and waste valve whether above

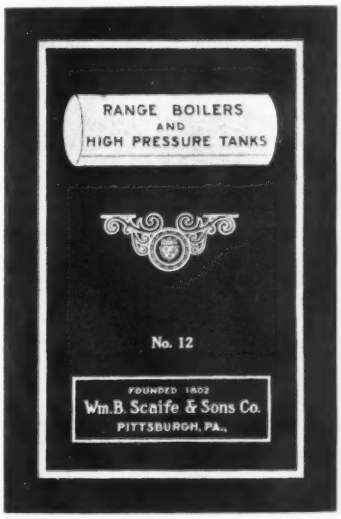


The Quick-Pression Stop and Waste Valve.

ground or under ground will waste properly and turn easily, and it lasts as long as the house, according to the manufacturers, the Central Brass Mfg. Co.

WM. B. SCAIFE & SONS CO. ISSUE CATALOGUE NO. 12.

In this column is reproduced the front cover page of a new catalogue just issued by Wm. B. Scaife & Sons Co., of Pittsburg, Pa. This catalogue is their No. 12 Tank cat-



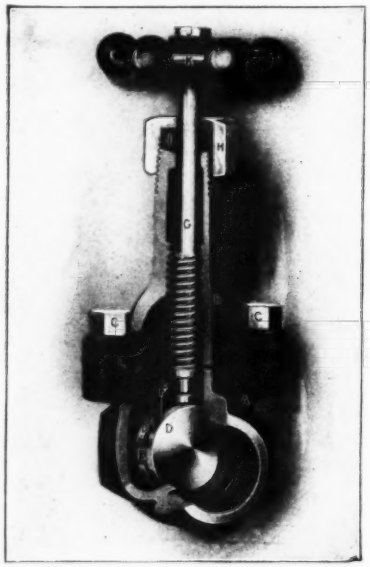
Front Cover of Wm. B. Scaife & Sons Co's. New Catalogue.

alogue and completely covers the entire field of riveted, brazed and welded tanks for every conceivable purpose, including air and gas receivers, water and oil storage

tanks, hot water boilers, steel barrels, expansion tanks and gasoline storage tanks. The book also contains many useful tables and considerable data connected with the construction of steel tanks and cylinders for various purposes.

A NEW IRON BODY GATE VALVE.

The D. T. Williams Valve Co., Cincinnati, O., have recently placed on the market their new "Cino" iron body gate valve, sectional view of which is illustrated in this column. In presenting this new product the manufacturers claim that the best features known in gate valve construction are embodied in the "Cino" valve. It can be



The "Cino" Iron Body Gate Valve.

used for steam, water, oil, air or gas, and is guaranteed for working pressures up to 100 lbs. The "Cino" valve has a wide range of utility and is said to be the only self-grinding double-disc gate valve on the market. By studying the illustration it will be noted that the two discs are coupled to the malleable disc holder in such a manner that they are free to make almost a complete revolution, and the rotary motion thus imparted automatically grinds in the discs and cleans the seating surfaces of dirt or scale. This new valve is being received with much favor among the plumbing trade.

THE METAL MARKET

A BROAD MARKET FOR STEEL.

All developments during the week have been for the better in the steel trade. The leading makers of plates, bars and structural shapes advanced their prices $1 per ton and some of the more highly finished forms were moved upwards $2 per ton. The reason for this was the enormous demand coming from all parts of the country. While shipments were very large during June there was more tonnage on the books of the makers the last part of the month than there was in the last part of May. It may not appear so in the statements of July 1st, for a number of contracts were cancelled on that date by the steel makers on account of their low price. The railroads of the country have been large buyers of equipment during the last few days the most notable orders received being those of the Pennsylvania. Some of the other Eastern roads will have to buy rolling stock in the next few weeks. The market for foundry iron is very firm in all parts of the country and buying has been much larger in the last week than for a month. The recent order of the Singer Sewing Machine Co. for 13,000 tons is a case in point.

Quotations are as follows:

No. 2 southern foundry, Birmingham	$11.25 to $11.50
No. 1 northern foundry, New York	15.75 to 16.00
No. 2X northern foundry, New York	15.50 to 15.75
No. 2 northern foundry, Chicago	14.50
No. 2 southern foundry, Cincinnati	14.25 to 14.50

AWAITING DEVELOPMENTS IN COPPER.

The producers of copper have the upper hand in the situation and the consumers are afraid to run the risk of not having metal when needed and so are buying not only for present but for future delivery. They have not purchased so much in the last week but no large consumer is letting the market get away from him. The leading seller of Lake copper has withdrawn from the market and there is little doubt, among those well informed in the copper trade, that when this seller does have copper to sell it will ask at least 18 cents. The consumption of copper in this country is very large and apparently this is only a beginning for the steam railroads have not begun to electrify their main lines.

LEAD.

The market is steady with the leading seller asking 4.50 cents for shipment lead in large lots.

SPELTER.

A new high record was made when spelter sold at 7.10 cents this week. This metal for prompt delivery is scarce.

TIN.

The London dock strike is the great feature of the tin trade. No shipments were made from that port to New York last week but the situation was relieved by the arrival of about 1,000 tons of tin from Holland and by direct steamer from the East. If the strike continues the consumers of tin will be able to get a large quantity of metal by these routes but it will take some time to supply a sufficient working surplus. The United States Steel Corporation has enough tin for its own use and it has sold some to consumers at about import cost. Some sales were made last week at 49 cents but the price declined later to 48 cents.

CHICAGO NOW HAS VENTILATING INSPECTOR.

Dr. E. V. Hill has been appointed ventilating inspector for the City of Chicago and he has entered upon his new duties. Only three candidates for this office passed the examination, out of a total of thirty applicants, the successful candidates with their standing being as follows: E. V. Hill, 74:86; John Howatt, 73:33; G. D. Luce, jr., 70:01. Dr. Hill has been a sanitary inspector for the last five years in the Health Department of Chicago, and he was on the eligible list for supervising sanitary inspector. Much credit is due him for his excellent work in passing the examination, which was a very difficult one. He was assigned to duty June 17th.

News of the Plumbing and Heating Contractors

Reports of the Week from Many Different Cities Show Both Business and Personal Activity in the Trade

NEWS FROM THE PACIFIC COAST.

San Francisco.

The building season on the Coast is now just about at its height and the number of skilled mechanics and unskilled laborers out of employment is the lowest for the past eight or nine months at least. Contracts for new work are being let with encouraging rapidity and the present building activity is bound to continue well into the fall, even if no new work of importance is started. In the vicinity of San Francisco, however, there is sure to be much new work launched from time to time as the conditions here are more and more affected by the World's Fair preparations. In San Francisco the relations between the builders and the labor unions have been quite harmonious for a long time, as a rule, and no strike of importance in the building trades has been pulled off within the past year, and the prospects are bright for a continuation of peace between capital and labor.

General business conditions on the Coast are rather quiet, a fact which is conveniently blamed upon "presidential year." The prospects for good crops are very bright and the temper of business men is usually optimistic, hence a brisk fall season is very probable.

The most important event in building circles for the past week was the awarding of the $25,000 prize for the successful plans for the new city hall. Bakewell & Brown, a firm of two young architects, won the competition with their beautiful design of a municipal building in a style based on the Roman Renaissance. Besides the first prize the architects will be given a six per cent commission on the cost of the city hall. The building is to cost about $4,000,000. Working plans are already in preparation and will be let for figures at the earliest possible moment so as to insure the completion of the structure before the opening of the fair.

The state convention of the Master Plumbers' Association is being held at Lake Tahoe this week and a large representation of the master plumbers is in attendance. It is reported that a special train bearing two hundred master plumbers came from Los Angeles and vicinity. From San Francisco many prominent members of the trade are present, and altogether the convention this year seems likely to be a most enjoyable affair. Accompanying the delegation from here were twenty members of the Occidental Glee Club. At Truckee, where the delegates changed cars for Lake Tahoe, they were met by the local Chamber of Commerce and shown around the place. The choosing of Lake Tahoe, one of the greatest beauty spots of the West, as a meeting place for a master plumbers' convention shows that the association is largely composed of nature lovers.

William Wilson, the well known local plumber, is soon to erect a nine-story building on the east side of Mason Street, between Geary and O'Farrell Streets. The first floor of the building will be devoted to the Wilson plumbing business and the remainder to apartments.

R. W. Kinney, of the R. W. Kinney Co., plumbing supplies, is to erect a four-story business block on Tenth and Washington Streets, in Oakland, very soon. Plans for the building are now being prepared. This building will not be used for the plumbing supply establishment in Oakland.

The Pacific Fire Extinguisher Co. has been awarded the contract for an automatic sprinkler system for the six-story and basement Brooks building on Mission near Second Street. The John G. Sutton Co. was awarded the plumbing contract; and Mangrum & Otter the heating contract.

It is announced that bids are to be advertised for by the authorities at Fresno, Cal., for lavatory and plumbing fixtures for the Webster School at Fresno.

Bids will soon be called for changing the heating system at the Farragut School at Vallejo, Cal., to an oil burning system.

W. G. Esson has taken over his partner's interest in the Las Cruces (New Mex.) Tinning & Plumbing Co., and is now conducting the business alone.

NEWS FROM NEW ENGLAND.

Massachusetts.

Winchester.—Edwards & Poor Co. are installing plumbing in the oldest residence in Winchester, the Stratton house on Main Street. The same concern also has the contract for plumbing Scudder Klyce's residence on Highland Terrace.

Springfield.—The C. A. Albe Plumbing Co. has moved to new quarters on Willow Street and on its "opening" day entertained a large number of callers. The officers and employes of the company served as hosts and showed the visitors about the establishment. The Albe company has grown out of the enterprise of Charles A. Albe, who in 1900 opened a small plumbing shop on Armory Hill, Springfield. Seven years later the business was incorporated. The company first had quarters on Dwight Street, but it soon outgrew them and moved to Willow Street. A year ago the Willow Street building was vacated and temporary quarters taken up while the others were being remodeled.

Connecticut.

Waterbury.—M. J. Daly & Sons, Inc., have the contract for plumbing and heating in connection with the alterations and additions being made to George B. Lamb's residence on Pine Street. The Charles Thatcher Co. has the contract for plumbing and heating of Frederick L. Muhn's residence on Willow Street. The W. S. Carberry Co. is installing plumbing in a house on East Main Street for M. A. Doherty; in W. Finkenzeller's house on Cooke Street; and in W. R. Freter's house on Hamilton Avenue. The same concern is also installing plumbing and heating in C. J. Porzenheimer's new house on Waterville Street.

Bridgeport.—Moultrop and Wellington is the name of a new plumbing firm which has established headquarters on How Avenue. A. E. Roberts has been awarded the contract for plumbing two new houses on Wentworth Street for G. L. S. Terry. Both houses will be arranged for two apartments, with all modern conveniences. Doherty & Freeman will install the plumbing and metal work in a five-apartment and business structure to be erected on Pembroke Street for John Galla. The same concern is also doing the plumbing and metal work in an eighteen-room house on Pembroke Street for Paul Figula.

Hartford.—A certificate of organization has been filed with the secretary of state by the Henry Plumbing Co., of New Canaan, Conn.

Meriden.—The Taylor-Flagg Co. will install the plumbing in a residence which is being erected in Bradley Park for C. R. Gardiner.

NEWS FROM PHILADELPHIA AND VICINITY.

James H. Kramer, 3611 North 22nd Street, Philadelphia, has the contract to install the plumbing in the new house to be erected for Mrs. A. Buckley at Lawnton Avenue and Oak Lane, Philadelphia.

W. C. Smith, 1722 Federal Street, Philadelphia, will install drainage systems at 1839 Dickinson Street, for the Woodward Estate, and at 2020 Moore Street, Philadelphia, for W. H. Keetley.

Andrew Wanner, 3743 Bouvier Street, Philadelphia,

has the contracts for plumbing in four new houses on Horter Street and Lincoln Drive, Philadelphia, for J. M. Snyder.

J. P. McGuckin & Bro., 1023 Christian Street, Philadelphia, will install the heating in the building at 920 Spruce Street, Philadelphia.

Thomas Shapcott, 700 North Twenty-third Street Philadelphia, has secured the contract for plumbing at 1519 Senate Street, Philadelphia, for John Smith.

The West End Heating Co., 4641 Lancaster Avenue, Philadelphia, has the contract for heating in the Morris Realty Apartment house, Germantown, Philadelphia.

B. Landan, 1216 North Fourth Street, Philadelphia, will install the plumbing in six houses at Hellerman and Hasbrook Streets, Philadelphia, for J. Brough.

L. Wanner, jr., 33 South Seventeenth Street, Philadelphia, will install plumbing at the property northeast corner Amber and Dreer Streets, Philadelphia, for Weiner Bros.

The contract to install the heating system in the residence of J. E. V. Titus at Bala, Pa., has been awarded to Wm. J. McCuliff, Fifty-second Street and Haverford Avenue, Philadelphia.

John J. Harnett, 2340 North Twenty-ninth Street, Philadelphia, will install the plumbing in five new houses at Richmond and Plum Streets, Philadelphia, for C. Kiely.

Rhodes Bros., 5043 Germantown Avenue, Philadelphia, have secured the contract to install plumbing in eight new houses at Forty-eighth and Ludlow Streets, Philadelphia, for F. C. Michaelson.

W. H. Nash, 616 South Seventeenth Street, Philadelphia, in addition to other contracts, will install drainage systems at 1314 South Dorrance Street, 1012-1032 Cleveland Avenue, and 1232-1238 South Twentieth Street, Philadelphia.

J. J. McCaffrey, 3110 G Street, Philadelphia, will install the plumbing in seven houses at Shiller and Braddock Street, Philadelphia, and in three houses at Westmoreland and Poller Streets, Philadelphia.

The contract for the plumbing in two houses, 2859-61 North Reese Street, Philadelphia, for Shipton & Payne, has been awarded to H. J. Schisselbauer, 1535 North Lawrence Street, Philadelphia.

The Philadelphia Steam Heating Co. will install the heating system in Dr. L. Webster Fox's residence, Seventeenth and Spruce Streets, Philadelphia.

Fred Smith, 1819 Church Street, Frankford, Philadelphia, will install the plumbing in six houses for W. H. Yelland, owner, at Bennor and Van Dyke Streets, Philadelphia.

H. Manning, 825 Spring Garden Street, Philadelphia, will install the plumbing in the new addition to the Haines, Jones & Cadbury Co.'s plumbing supply house, Philadelphia.

Thomas H. Beamer, 5701 Pine Street, Philadelphia, has secured the contract for plumbing in two houses, 250-52 North Sixty-first Street, Philadelphia, for E. S. Tomlinson.

Thomas Cummings, 78 Pastoruis Street, Philadelphia, will install the plumbing in six houses, 2038 to 2048 East Ontario Street, Philadelphia, for J. M. Cassel & Son.

NEWS FROM PITTSBURGH, PA.

The Pittsburgh Master Plumbers' Association plans to be well represented at the national convention which is to be held in Salt Lake City, July 16-18. The following is the roster of delegates who have been elected to go to this meeting: Secretary E. M. Tate, H. M. Hay, Allen M. Fadden, M. Purtell, George Stewart, Al. Whitehead, P. J. Montague, M. Sniveley, W. J. Elkin, T. S. Scanlon, A. J. Zilliox, John Stickith, Albert Henderson, T. R. Marshall, National State Vice-President S. S. White, and W. H. Rosewell, president of the Pittsburgh association.

It is planned to have Pittsburgh represented at the National Convention as the city never was before.

In August, the Pittsburgh plumbing fraternity plans a jollification, and with this end in view there will be a gala time at Olympia Park. Committees have been named, and a program of sports and other good things are being arranged for. There will be an old fashioned picnic, and the usual ball game in the afternoon. This game will be between a team representing the plumbers which will be in charge of E. M. Tate, while the team representing the jobbers will be under the guidance of W. Y. English, of the Sterling Sanitary Manufacturing Co. Plumbers and jobbers will go hand in hand to this affair, and as the plumbers carried off high honors at the 1911 outing, the jobbers are determined this year to get "sweet revenge."

NEWS FROM BALTIMORE, MD.

Voltz & Yousee have nearly all the plumbing business in the territory about the Windsor Mill Road and North Avenue. When the development of Wallbrook had really attained proportions, certain of the residents, by the way of elevating the moral tone of the inhabitants, induced Voltz & Yousee to locate there. Their work may now be found in most of the houses in that neighborhood.

The plumbers are taking advantage of the talk about a Greater Baltimore to create a demand for such work as will give better profits and better returns for the money invested.

Howard E. Ritte, 413 North Calvert Street, appreciates the value of a good window and store display and finds that it is a big asset in the business. Many an order is gained by these displays. There are few shops better arranged than that of Mr. Ritte.

James McCrea & Son, 19 North Carrollton avenue, who occupy their own building, have an attractive display which appeals with especial emphasis to the residents of Franklin Square.

Eugene R. Pruitt, 1737 West Pratt Street, is winding up a busy spring season. He has about all of the sheet metal and plumbing work in a radius of five blocks to look after regularly, and gets many a contract away from home.

Personal friendship is a great factor in the business of John R. Trotter, 305 East Preston Street, and he does not overestimate its value. Mr. Trotter gets a first chance at the money in all of the big apartment houses in the neighborhood, and has all of the work given out by two or three theatres.

Business with Burrows & Broderick, 1539 Maryland Avenue, is good. They figured on twelve jobs last week and got all of them.

Royal Boland and Howard Boland, sons of the veteran, Thomas Boland, realize the advertising value of letters and business stationery, and the impression made by theirs is apt to be a lasting one. Their letter heads may be said to be a correct indication of the business character of their concerns.

During the Democratic Convention many of the West Baltimore plumbers kept their windows lighted all night, and they believe that the idea is good enough to adopt permanently. The cost of lighting is insignificant when the returns are taken into consideration.

NEWS FROM WISCONSIN.

Sheboygan.—Steps are being taken for the appointment of a plumbing inspector in this city. Alderman John C. Meyer has introduced a resolution in the common council authorizing the appointment of a plumbing inspector at a salary of $1,000 a year.

Milwaukee.—Albert Schlitz has resigned as sanitary inspector of the health department in this city. Mr. Schlitz will soon be in the plumbing business, as he is now at work establishing a business of his own.

Two Rivers.—The Sanitary Plumbing Co. has been formed here. John Levanetz, who has conducted a plumbing establishment for several years, sold an interest to Wm. Schafer. The two men formed the new company, which will install heating systems in addition to doing regular plumbing work.

Augusta.—The new plumbing firm of Frederick & Hart, formed here recently, is enjoying splendid business. The water and heating system in the Bank Building are being installed by this concern, as is the plumbing for Fred Dohr's new residence. They also have several other good jobs in sight.